

MARCH, 1967

DESIGNS AND DATA

flying **models**

A

Still Only
35¢

A/2 Nordic:

Roger Simpson's

"ATHENA"

1966 Nationals Winner

Stunt Controline:

Jim Vornholt's

"ME. 262"

.35 mills, Semi-Scale

Flight Recording Altimeter:

Maynard Hill's

"BARAGRAPH"

Radio Control:

"BOOMERANG" BIPE

F&M Digital, Enya .60



★ NEWS

★ PHOTOS

★ DETAILS

★ DATA

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How to enter: All you have to do is send in the end panel (or reasonable facsimile) from any Revell Model Kit to Revell with your name and address on the reverse side. Enter as many times as you wish. It's that simple. So do it now! The Gemini Sweepstakes officially closes on May 15, 1967. Get with it.

Winners will be selected after June 1, 1967. All entries become the property of Revell, Inc. and none can be returned. Judges' decision final. Contest subject to local, state and Federal laws, and void where prohibited. Revell employees, employees of distributors, dealers or their immediate families are ineligible.

Revell

Revell Inc., 4309 Glencoe Ave., Venice, California.



flying models

The Model Builder's
How-To-Do-It Magazine

Number 361

March, 1967

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Front Cover: Have you been following each episode? Trouble follows this guy like a plague. How did he end up on the beach? 'Cause it's the nearest clearing to Dr. Suture's Mistake Clinic. You see, Pauline let him out to play radio with us. Then he started the engine, leaned it out till it howled. Then Wally howled. Guess which was louder? Yes it was, same finger he drilled all hollow last week. It whistles now when the wind blows through the stitches. He's smiling here as sun sets, 'cause novacaine hasn't worn off yet. When it does, he'll kick the thing to the sharks. His "Boomerang" bipe, an Enya .60TV, F&M Digital 5, a nice mild flyer. Flip a couple of pages and you'll find plans.

JOSEPH J. HARDIE
Publisher

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ED WHALLEY — Modeling News
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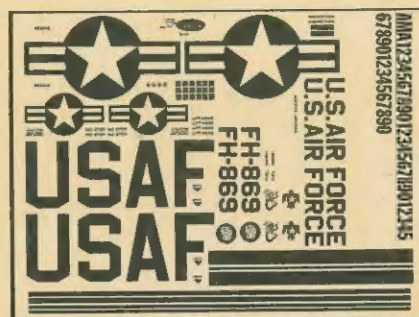
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What's Cooking?

This column is intended as an editorial report of new products available to model builders; based on reports, press releases, or notices sent by the advertisers or makers of these items. The following is not an offer for sale. Toward this end, it should be noted that prices and details are as accurate as can be determined by this office at the time of publication.

Prices and availability are subject to local conditions and to change without notice. While every effort is made to maintain accuracy, it is not within the province of this publication to control, or maintain, prices and availability. Please check with your local hobby dealer, or write direct to the manufacturers. Full addresses may be found in their advertisements.



● **Finishing Touch Decals?** This you've got to see. Darned hard to ever cook up nice scale aircraft without the colorfully trimmed detailing that can only be done by decals, and as often as not those that have been available in the past were lacking in many respects. Most have been too small for the needs of modern-day R/C designs, which are pretty large aircraft.

Bill Polvogt faced this problem himself when looking for suitable decals for his R/C plane he was building and found that there just wasn't anything

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FOR ADVERTISING RATES ADDRESS: Adv. Dept. FLYING MODELS, 215 Park Avenue South, New York, N. Y. 10003. (Telephone 212 GRamercy 5-7447) or WEST COAST ADV. REPR.: Joseph Mervish Associates, 4721 Laurel Canyon — Suite 211; North Hollywood, Calif. 91607. (Telephone 213 TRIangle 7-7556).

SUBSCRIPTION RATES: Annual (12-issue) subscription \$4.00 in U.S.A., \$4.60 elsewhere: Remit by Money Order or Draft on a bank in the U.S. payable in U.S. funds. Residents of Great Britain can place their subscription orders through Atlas Publishing & Distributing Co., Ltd., 334 Brixton Rd., London S.W. 9, England. CHANGES OF ADDRESS must be sent to the publisher — as well as to the Local Postmaster — otherwise copies will not be forwarded. Send changes of address to reach us six weeks before next issue date — give both old and new addresses.

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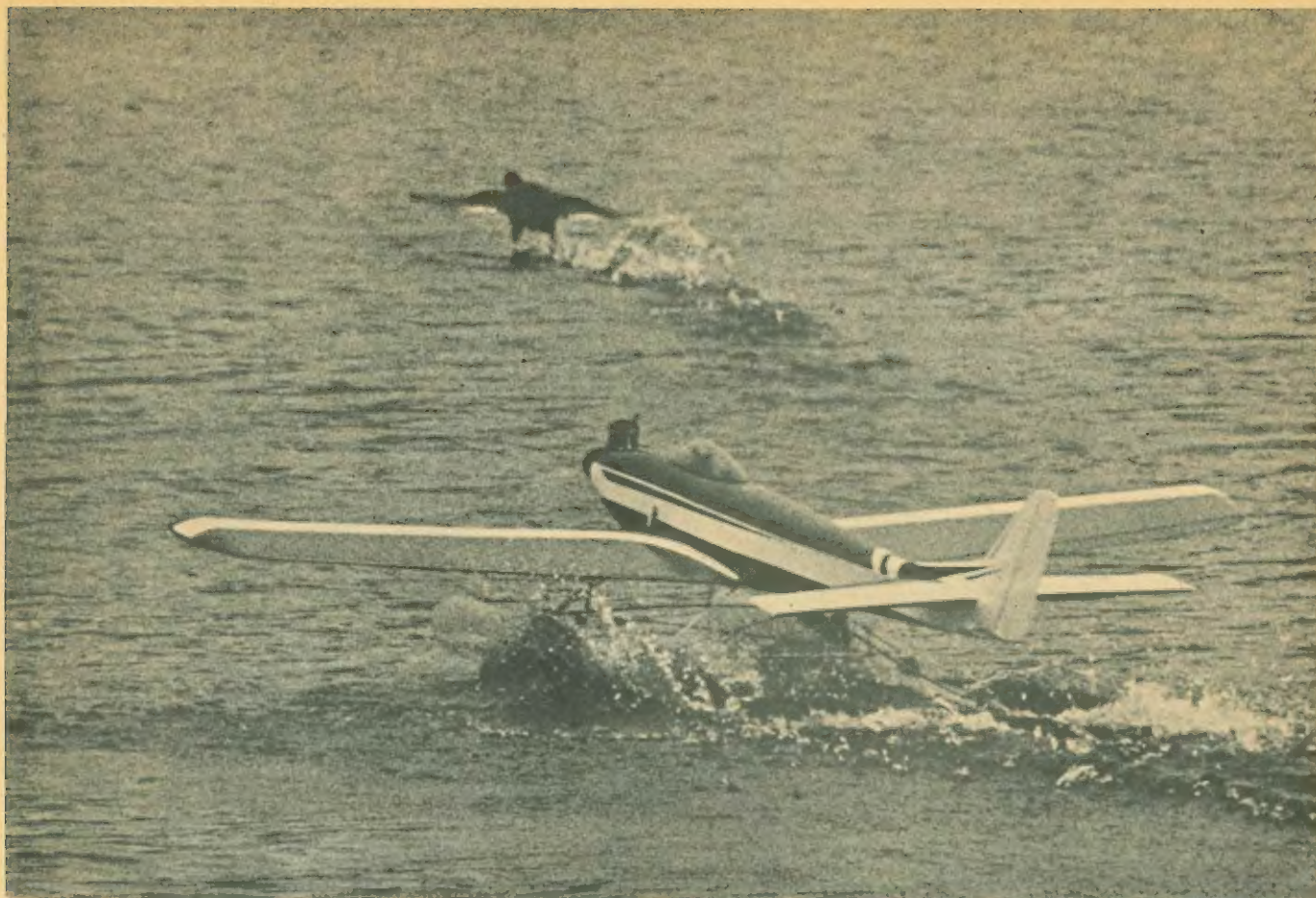
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All Wet



Formula for lake in Holland: dig up peat moss, equals instant lake. Trick is to leave a place to stand, like so. Wider even if you don't want your tail stepped on. "Sepi" design slowly slipping overboard.

"Sepi" design sits on three triangular floats, takes-off and lands well according to movie films we've seen, but it is "not a great success" according to W. Aarts. An easy conversion from land to water.



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MANTA 17 Wingspan

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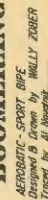
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58" span gentle-flying biplane . . . F&M Digital 5, an Enya .60 T.V.

Wally Zober's

BOOMERANG BIPE...

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

◆ No matter how much polish you apply to a super-streamlined multi, it still adds up second best when a nostalgic old biplane shows up on the field. Like the clipper ships of old, they've just got more appeal than their modern-day counterparts.

Envy describes it, pure and simple. Every time an Aero-Master, Pitts Special, Great Lakes, Little John or Hobo

showed up at the field, I felt like stepping on my own tail. Fate took a hand in due course and I planted my "Mark I" even with the potatoes. As I shovelled up the residue, my mind conjured up a vision of a big tame biplane, a realistic beast that even I could fly. Most of the biplanes I had seen were pretty fast and heavy affairs, ideal for contest acrobatics, but a lot of potent performance

MULTI RADIO BIPE:



Passing overhead. Wing sweepback visible here.



Servos, receiver and battery pack foam packed away in their nest. Easily accessible in body.



"BOOMERANG"

... continued ...

for the flyer with minimum stick time under his belt.

So I headed for home with the surviving parts and waited for Pauline to stop laughing. "Dont feel too bad Honey" I said, "I'm gonna build a biplane. \$1000 worth of balsa should cover it." Pauline stopped laughing. "Try scrub oak" she said.

Well, in the end we compromised by chopping down only the straighter, taller, firmer scrub oaks that were branded "Sig Contest Grade for nostalgic bipes."

"I'm going to draft the basic design now Pauline," I informed her. "I'll get the crayons" she replied.

Two months later it started to look like an airplane. Spanning 58", a slightly swept upper wing, an Enya .60TV in the nose, F&M Digital 5 radio equipment, a fairly conventional biplane design, but large enough for a lighter wing loading for a tamer nature than most biplanes seen about.

"It's almost finished Pauline, what color should I paint it?" ... "Tragic black might be appropriate" she suggested.

The F&M Radio had performed without a glitch for the full '66 flying season, and was therefore a logical choice for the new biplane. The Enya .60 powerplants are well known for their ease of starting, smooth power and rugged construction. To keep the noise down to an acceptable level for the nearby neighbors to our sod-farm flying

(Continued on Page 27)



Devoid of "N" struts between the wings, lessening chance of a hole being poked through covering. Each wing stressed to meet air loads.

Tom studies control response, prior to flight. Why worry Wally?



Enya Muffler, Hartman Tailpipe

It calls a "sod-farm" home, we should have it so good.

Tom Wenzel at left checked the ship out on the first flights, found it mild and in trim. The throw of the ailerons was increased by moving linkages to center holes in the aileron horns.



1966 Nats Winning Nordic A/2



FULL SIZE PLAN AVAILABLE

THROUGH

MODEL PLAN SERVICE

80" of Nordic grace . . .

superb blend of fishrod, brass & balsa:

Roger Simpson's

"ATHENA"

♦ The first of the "Athena" design models was built in 1963. I had witnessed Averjanov's Nordic A/2 win at the 1961 World Championships and I was interested in trying airfoils he had used so successfully. Also his dihedral stab was tried, to see if it improved a model's performance more than just keeping the stab up out of the grass. The flying characteristics were excellent, but the original wing construction showed a weakness for folding during the tow.

The present model's wing construction was adopted from an article about windy weather construction utilized by some Dallas, Texas, modelers. It featured a semi-D torque box with small spars used instead of top sheeting. This construction, plus the replaceable wing wires held up perfectly in windy weather. The fiberglass rod boom was used strictly to facilitate ease of building. It has also made this A/2 one of the most durable models I've ever had. The model has always had good towing tendencies and a very soft glide. I prefer the flat inboard panels over inboard dihedral as it seems to have a flatter glide, whereas the dihedral models seem to lay over on the inside wing while circling. Late evening test flights while stationed in Sacramento, California, showed the model capable of 2:35 to 2:45 in still (stable) air. After flying this design for three years, this year was it's most successful contest season,

winning a first place at the Florida State Championships, second place at the Air Force Championships, and a first place at the National Championships with a time of 14:42. The Nationals win also brought the "Athena" the Tulsa Glue Dobbers annual perpetual trophy for all classes hightime in Nordic. Tow-

line glider is certainly the least expensive of the three FAI free-flight events. You can build and fly a Nordic for less than the price of an engine timer for a power ship or one skein of rubber for a Wakefield model. It is quieter than a power ship and cleaner than a Wakefield, but—it has the drawback of hav-



Roger and the "Athena." Lean, efficient A/2, bred from many past contest ships. Flat center-section for level wings while in glide circle.

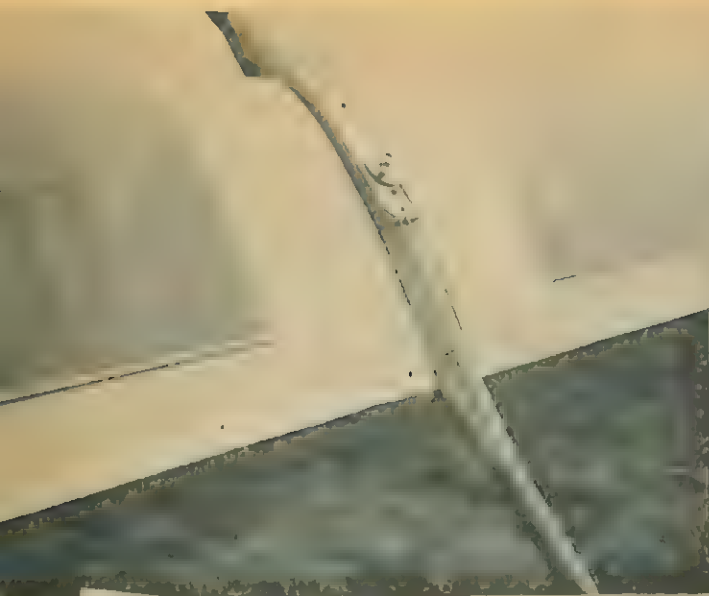


D/T timer mounts above wing. Wing panels plug into fuselage. Tubing and $\frac{1}{8}$ " piano wire make ideal, easy connection. Soars like a bird.

Typical long, slender high aspect wing, minimum cross-sectional drag.

Tow hook is readily adjustable to suit prevailing wind conditions.

A slight "V" stab, underslung rudder fin, clear of the D/T pop-up.



"ATHENA" NORDIC

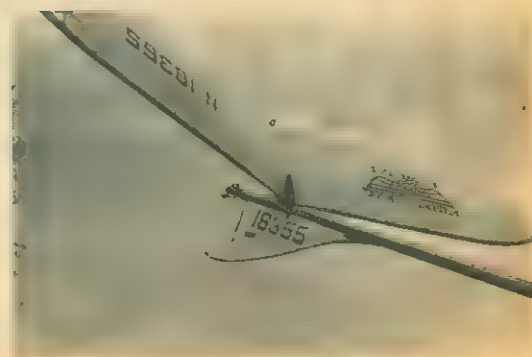
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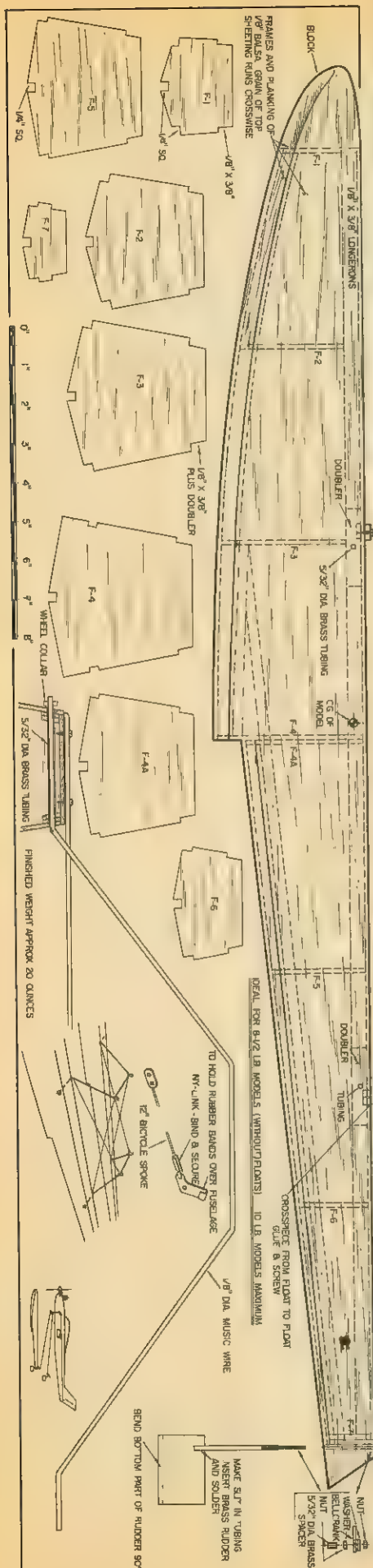
ing to have another person to safely launch the model. The importance of knowing the person who launches for you, and having practiced with him prior to competition can not be stressed enough. A poor launch can put a man out of the contest as quick as a big downdraft.

Construction:

Wing: The wing is of conventional construction, so we will just touch on several of the more important steps. To cut out your plywood ribs and drill them so they are all identical, cut twelve 1"x7" rectangles from the correct size plywood. Glue and stack them together (making sure the two $\frac{1}{32}$ " plywood pieces are on top,) using rubber cement. Draw the "A" rib airfoil pattern on the top piece. Use a drill press to drill the $\frac{3}{32}$ " dia. wing wire holes. Then, using a jig saw, cut out all the ribs as one. Separate the two $\frac{1}{32}$ " ribs and two $\frac{1}{16}$ " ribs to use as your "A" ribs. Draw the "B" rib pattern on the top rib of the remaining eight, (spar locations, etc.,) and use the jig saw again to cut all the ribs at once. Sepa-

(Continued on Page 46)





Falcon 56, float equipped. Vinkeveen, Holland.

“TWIN FLOATS”

Wil Aarts'

◆ Seaplanes fall into two basic categories: flying boat types and twin-float designs.

Those aircraft that are designed from the keel up as seaplanes generally follow the typical flying boat configuration, a fuselage serving as the main hull, stabilizing wing floats to keep it

from tipping over, and the engine or engines in nacelles on or above the wing.

On the other hand, existing aircraft which were originally designed for land flying are most easily converted to water use with twin floats. This is true

(Continued on Page 26)

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

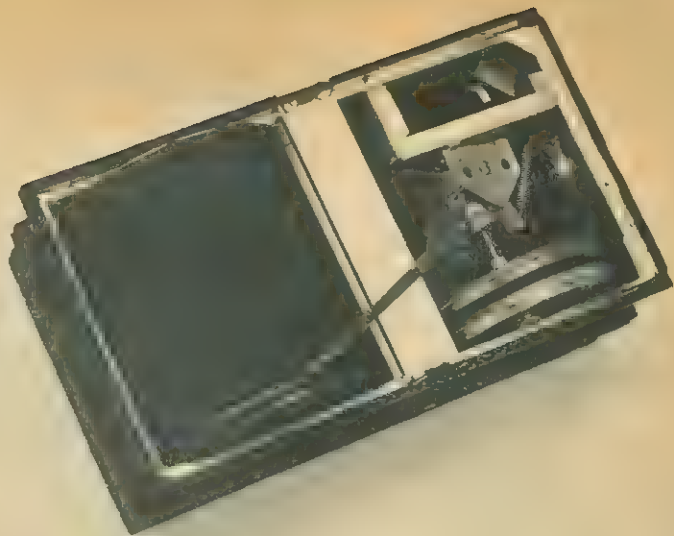
Proved highly successful on the canals of Holland, an easy-to-build pontoon design. Try 'em.



Ingenious "In-Flight" record of your altitude . . . scribes it on a smoked rotating drum.

Buried deep within Maynard's "Bong Boomer", this calibrated instrument brought back visual proof of 3,660 feet for a new F.A.I. World Record . . . A "fun" thing in any ship. You've got everything else stashed in, 6-ounces more can't hurt.

Model #2 unit. Note springs on all pivots to take up slack motion.



Maynard Hill's

"Baragraph"

Recording Altimeter...

◆ The DCRC's first venture into record breaking back in 1963 was a real eye opener. With the Navy's help at Dahlgren, Virginia, Bob Scott and Don Jehlik busted the Dunham-Bently speed R/C record and four of us Bill Northrop, Howard McEntee, Walt Good, and I, all broke the power altitude record held by N. Malikov of Russia. His record was 7,800 feet. It was relatively easy to get a model up to almost double his record. This was an invigorating revelation! We concluded that most all World R.C. records were standing at figures much lower than available equipment could take them if we gave a little push.

Success in record breaking attempts hinges on a lot of luck elements, but in the final analysis, what's needed most is to have the right equipment to fit the circumstances. For example, N. Malikov's soaring glider altitude record, which stood at 2,600 feet during 1965 was obviously a simple one to knock off. In fact, it's likely it was exceeded a number of times during the year and

(Continued on Page 34)



Model #1 Baragraph: shows frame with clock drive outside the drum. Overall size is larger than Model #2. Drum is connected to clock at a point where it rotates once every three hours. The higher speed of the drum makes this unit more desirable for tests of effects of a propeller, needle valve, fuel, etc. on the aircraft's rate of climb.



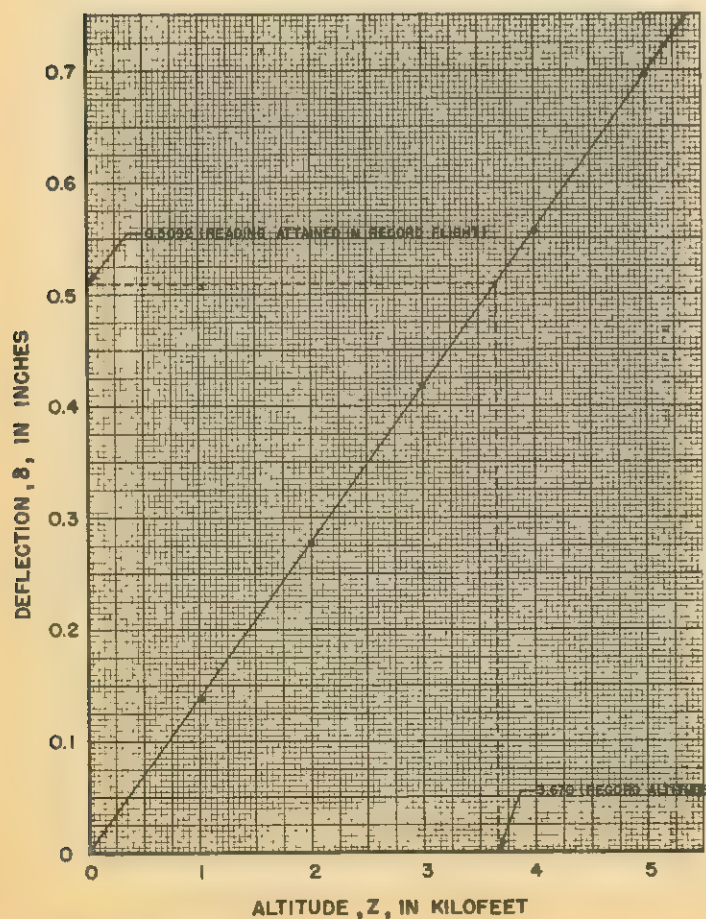
Another view of the Model #1 Baragraph design.

Calibration Trace and Flight Trace, on smoked drum. Numbers along steps are readings of absolute pressure. The ICAO atmospheric pressure curve was used to determine peak altitude reached as 3,660 ft.

Front view of Barograph #2 shows smoked drum, needle & aneroids.

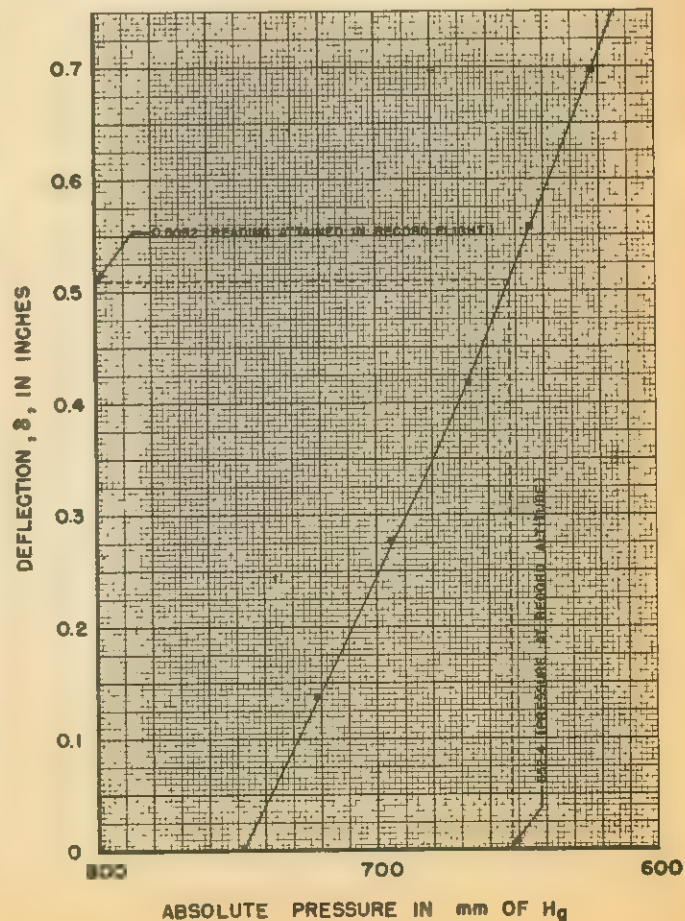


CALIBRATION OF BAROGRAPH AGAINST KOLLSMAN ALTIMETER



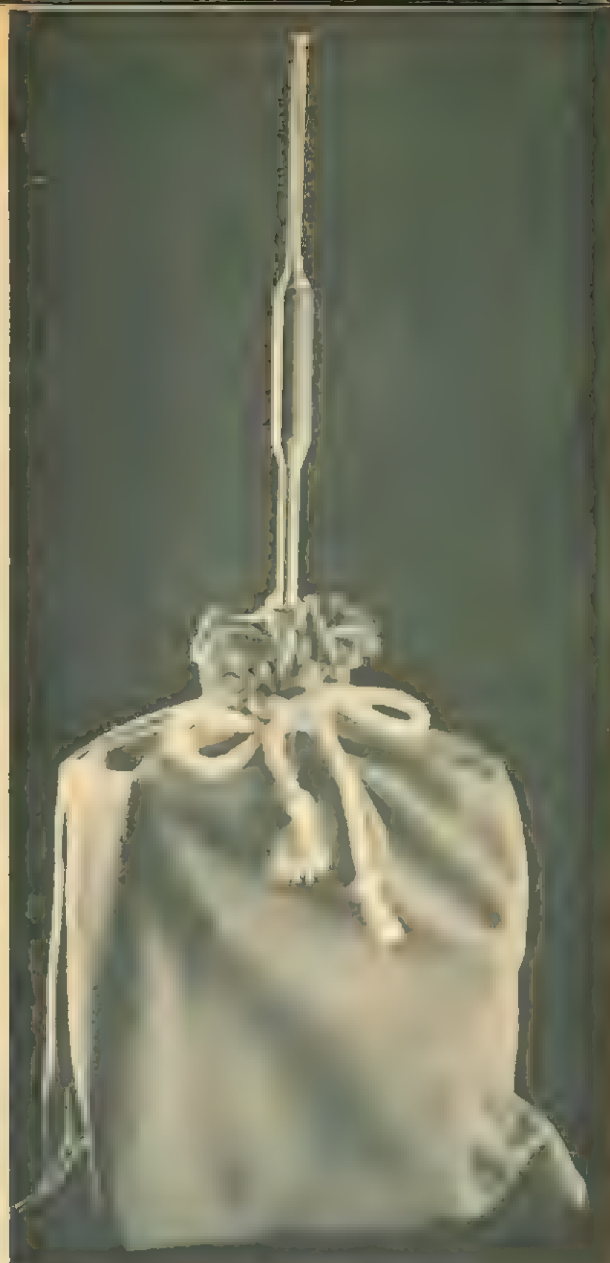
FLYING MODELS

CALIBRATION OF BAROGRAPH AGAINST ABSOLUTE PRESSURE



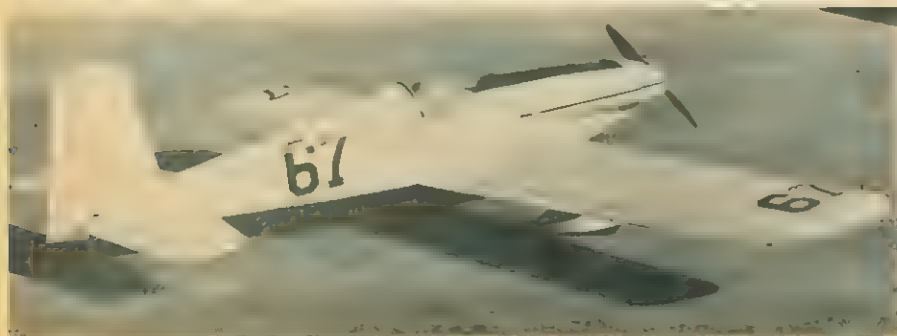


Hans de Zwart's spectacular photo from Germany, "Smoke Trails", a little visual incentive to get you out flying. Gottschling with an FB-37 design. Ideal way to please a crowd of spectators at shows.

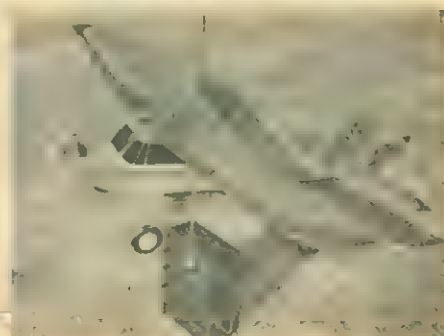


Dust and dirt in transmitters don't help a bit. Rand Mfg. has just solved problem with a handy "Jimmy Bag," fits all types & sizes, of bright red flannel. Washable, draw string to close it.

Dale Willoughby's **R.C. Channel Chatter**



Lanier Industries newest, a Semi-Scale "Long Midget" Pylon Racer, a 62" span, nearly ready-to-fly aircraft similar to their other designs in many ways. Wing area is 630 sq. inches, flying weight is 5¾ lbs. Air-O-Sheet and foam construction, bolt-on wing. Engine mounts radially, landing gear mounts in fuselage. Available in solid white or tu-tone colors. Intended for sport racing and contest use.



Don Mott's F&M Matador steers his surviving parts of past efforts. Bubble canopy on top of wing which is on top of cabin makes it the only second stary model flying. "Suffolk Falcons."

FLYING MODELS



Gottschling's "FB-37", twin engines, the ship laying a smoke trail.



Rand CG PAK consists of LR-3 Actuator, the Switcher, 600 mAh G.E. cells, wiring harness.

AS WE GO TO PRESS: 72 MC. CITIZEN-SHIP DIGITAL EQUIPMENT HAS BEEN TYPE APPROVED BY F.C.C. \$399.95

Israeli Modeling

◆ In 1948 a new nation was born. When the British gave up their mandate of Palestine, due to the constant conflict between the Arabs and the Jews, the area was divided and Israel became an individual nation. Wanting to know something of modeling in that country, I wrote requesting information and copies of an Israeli model magazine, to an avid model builder named Jerome Rosenberg, in Tel-Aviv. He replied in due time and pertinent parts of his letter are quoted:

"First of all, I would like to thank

you for your kind letter, and the request that I send you an Israeli model or aviation magazine. I hope you will excuse my delay in answering your letter. I am now in the midst of my military service and haven't been home for two months. To my sorrow, I cannot fulfill your wish, because of the following reasons: R/C flying is not common in Israel because of the high cost of the equipment. I fly only single-channel, however I plan to purchase an 8-channel Grundig reed system and to install it in the "Touchdown". So, R/C flying here is the hobby of relatively

few people (most of them with home-built units). Because of that, there are no R/C Clubs and no model magazines. The only Aviation magazine is a military one and cannot be sent abroad; besides that it is printed in Hebrew. There is however, an aviation club here, a really big one and because you asked me to send you an address here it is . . . I myself am not a member of this club, but I'm sure they will be only too happy to exchange correspondence with fellow hobbyists from the U.S. Before closing my letter, I want to congratulate you for the interesting and attrac-

A wild photo by Hans de Zwart of Fritz Bosch's machine on an inverted pass. (Germany) Takes courage, and never near spectators!!



Channel Chatter

2

... continued ...



1

1. In-flight photo of Bob Lofe's "S.E. 5" coming in for a landing at the RCL-Moose Contest. Very nice looking in the air, and handled very well on proportional equipment.

2. Would you believe this is from a kit? Well, not exactly! It was built from a \$3.98 Guillow kit doubled in size, with no changes in the decalage or wing areas by Bob Lofe. Flown on Kraft KP48 equipment, powered by a K&B .35.

3. Don Mensimer's "Shoestring" in flashy scale colors. Took second at the RCL-Moose contest in a tightly contested race . . . pylon cuts galore.

4. "AeroMaster" biplane by Ron Beroldi. Built from a stock kit, weighed 7 lbs., 8 oz. Used Orbit Digital radio, Super Tigre .60 engine.

5. Ed Shipe, candidate for 1967 NMPRA President, releases a Goodyear racer at the RCL-Moose contest. It takes a fast camera to catch such action!



tive form of the Flying Models magazine. I enjoy very much reading your "Channel Chatter". I would be glad if you could send me the address of an American modeler to correspond with, if possible a single channel man." . . . Rosenberg Jerome, Maoz Aviv/Bnei Efraim Strasse 21F, Tel-Avia, Israel . . . I have purposely given his full address so that any model builder wanting to correspond with an Israeli modeler may do so, especially those who have some extra single channel equipment gathering dust.

Glitched Elephant?

Recently we read where a full-grown elephant had broken its leg. Knowing

that Plaster of Paris would not withstand the stress of an elephant walk, the veterinarians at Bolton Center near Kennett Square, Pa., consulted with plastic engineers in Wilmington, Delaware area for a solution. The circus elephant had a cast of reinforced plastic applied to the leg and polymerized. Results of the application indicate a new potential market for fiberglass, other than for R/C fuselages. Now bring on the elephants.

R/C Endurance trials

Bill Nash, staunch member of the BIRDS club, tells of some of his experiments in building and flying his





A minimum of complex trim for scale effect. A few minutes with spray gun produces splotches.

54½" span Fox .35 Stunt Machine . . . Semi-Scale Controline:

by James R. Vornholt

'ME-262' STUNTER

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE"

The adequate area for stunting is plainly visible here, a lean, lithe machine with .35 mill.

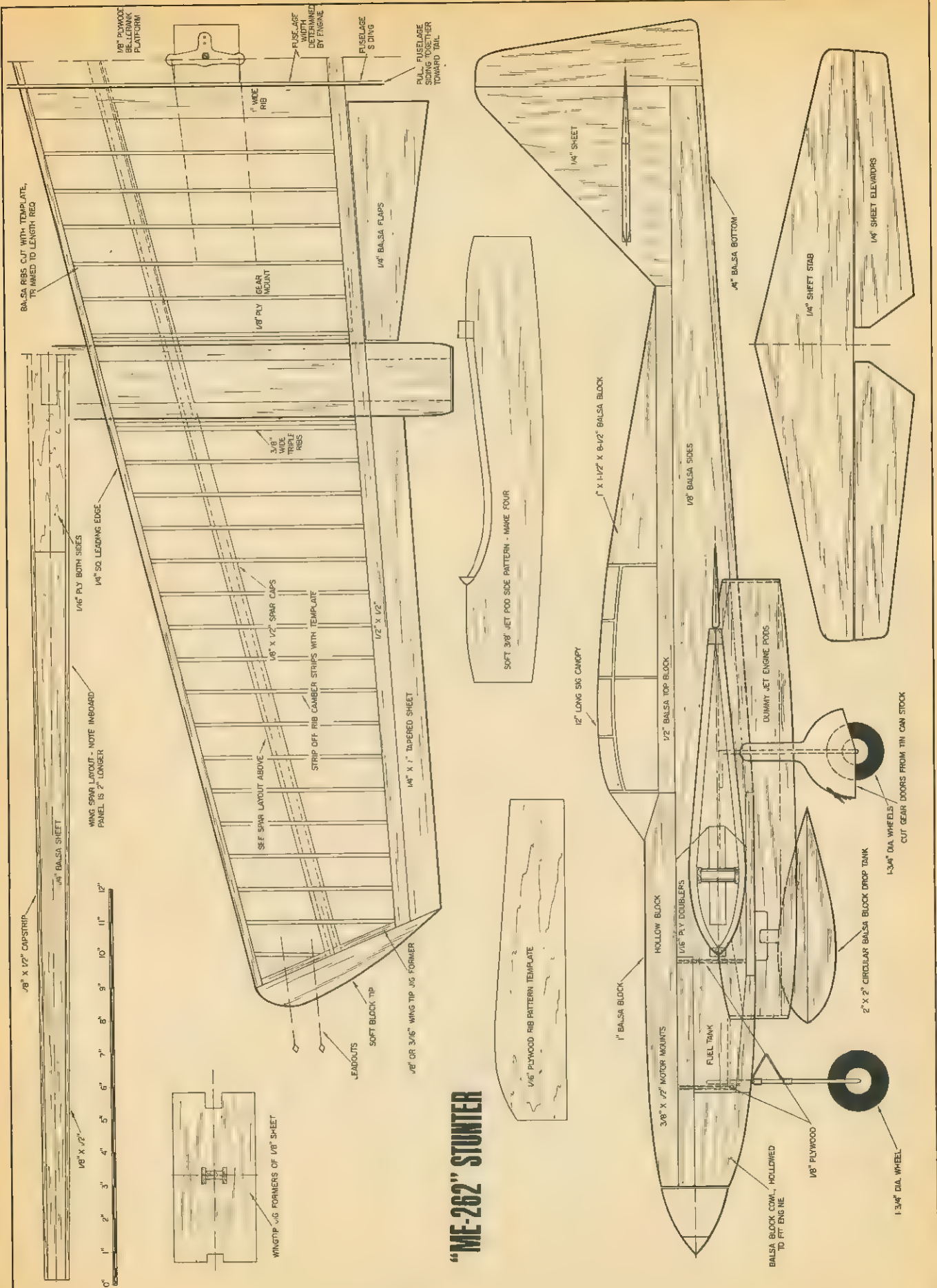


♦ First of the turbojet powered aircraft to achieve operational status, the "ME.262A" (single seat fighter) entered combat with the German Luftwaffe in August of 1944. Converted from its fighter configuration to that of a bomber as a result of Hitler's direct orders, the "262A" carried a bomb load of 2,200 lbs. Powered by two 1,960 lb. thrust Jumbo 004B turbojets, the "262A" was capable of approximately 522 mph, which was the fastest fighter in World War II.

The "ME. 262B" all-weather fighter and two-seat trainer was adapted to carry the new Fug 218 radar, as was as additional radio and communications equipment. Perfection of the airborne radar system proved highly successful, despite its vulnerability to window-jamming countermeasures by the Allied Air Forces.

This semi-scale stunt model may be built as the "262A" bubble canopy version or as the 262B turtle deck version as shown on plans. So, if you like semi-scale type stunter with a realistic fighter look, why not build one?

Construction: Start with a good level work table. Cut the body sides from ¼" sheet, using the straight edge for the top of the body. This is what you use for your alignment. Cut ¼" plywood doublers and ½" plywood formers. Glue engine mounts, doublers and body formers in place. We always fiberglass the engine and tank compartment, but of course this is up to you. Next, we are ready for the "I-Beam," which is quite simple. We suggest you select strong straight-grained ¼" balsa for this. Cut ¼" plywood doublers for each side of the inboard wing. Cut tip rib former and





Jim and the "Me-262." Semi-scale, so no concessions to stunt performance. Unique, capable.



Typical I-beam cambered rib-strip structure, a fast way to scratch-build this efficient wing.



SEMI-SCALE "ME-262"

WWII FIGHTER:

... continued ...

install leading and trailing edges, then, let this dry overnight.

While this is drying, you can be cutting and hinging the stab and elevators and flaps. Mount the bell-crank and install pushrods and control horns. Cut two $\frac{1}{4}$ " balsa pieces that the stab sits on. Now glue on stab and flaps. When dry you are ready for top and bottom blocks, as well as the nose block which we suggest you hollow for less weight. Next, install $\frac{1}{8}$ " plywood landing gear platform and mount the gear. This is made from $\frac{1}{8}$ " dia. wire.

Now you are ready to cut your wing ribs, using the rib pattern shown on the plan. Cut this pattern from $\frac{1}{16}$ " plywood, drilling three small holes $\frac{1}{16}$ " down from top of pattern. Place pattern on $\frac{1}{8}$ " sheet balsa, pin the

(Continued on Page 47)



Side profile offers a distinctively scale look.

Bernard Ash turns it loose, a potent machine.

Dummy jet engine pods, belly tank for realism.





Down in the valley . . . Foamin' Wing Bat in air over Hughes Airport, Santa Monica, Calif. This design fully acrobatic. Dr. Rolf McPherson's.



John Wathen, Moose meet winner, with Jeff Bates "Kurwi" design.

devoted to the world of silent flight

The Zephyr

by Dale Willoughby

◆ This is being written in December and thermal flying is next to impossible, even in California. As a matter of record, the month of November and part of December has been mostly Indian summer weather, which means warm sunshine and hazy, windless afternoons. Just before the wind dropped in October, a particular Saturday night showed promise of being just right for slope soaring. During the day the temperature had topped 90°, a strong westerly breeze was blowing as late as 7 p.m., near my home, which is 12 miles from the Pacific. This indicate to me a

fog bank would be moving in from the ocean as soon as the land mass inland had lost its heat.

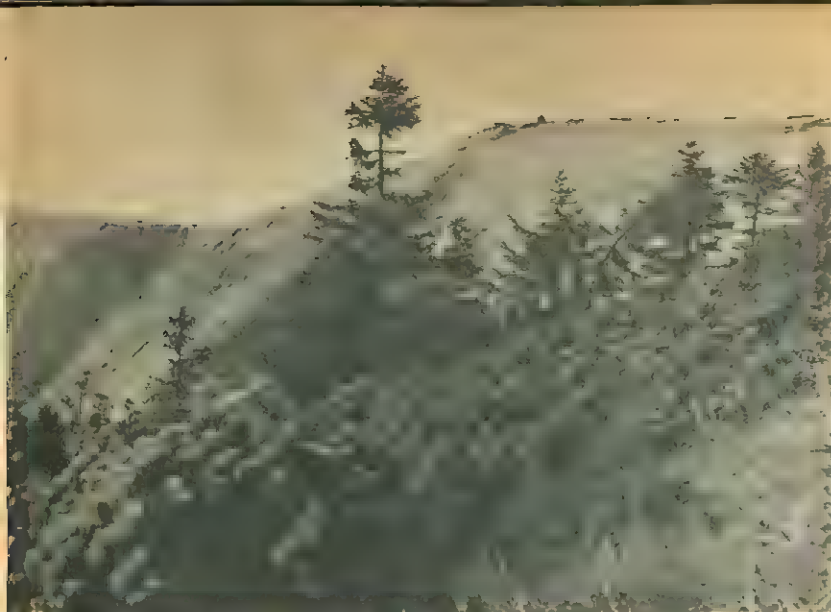
Arriving at 'Instant Lift' in the fading light of the sunset, my "Kurwi 33" was unpacked and assembled. Distant light from homes, stores and autos were ablaze and reflected in the foggy sky. The steady breeze still held a promise of lift, so I quickly launched. During the first two minutes, it was pretty touchy as the breeze felt upon arrival dropped considerably. Yet the "Kurwi" managed to stay airborne, so, knowing I could fly if the wind did not



Vladimir Stefan of Czechoslovakia, launches his duration record holder (see text) from top of Krkonose. (Snow Mountain.) Terrain is ideal.



Soggy panorama we would guess. Unless that umbrella is to ward off sunstroke. Ship is built up scale K-10 by Don Cole of Bristol, not from Graupner kit. F&M 10 Channel Reeds. $\frac{3}{32}$ " sheet planking.



Side profile of Krkonose (1602 meters) site of Czechoslovakia Record Trails last Sept. We must have many such open slopes in U.S. which could offer similar soaring thrills. Try them.



Scaled up "Hover King" by Barry Purslow. Flew in good conditions, a very majestic flyer, it soared along contour of the slope. Did some fine acrobatics, came within 2/10 seconds of 240 second time limit.

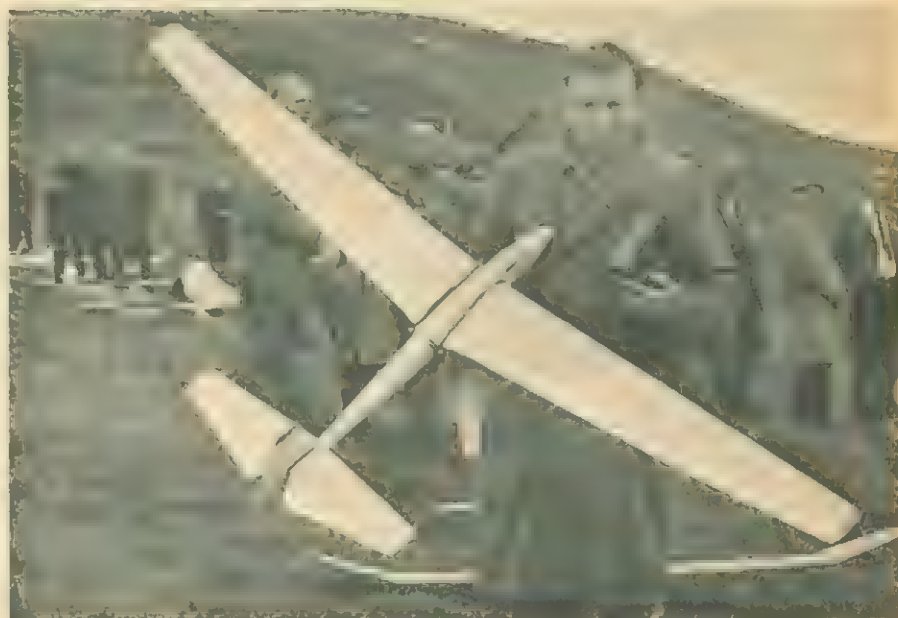
drop any more, I brought it around and landed it.

Taping the pencils and bulb to the fuselage ahead of the wing shoulder, I plugged in the shorting switch, and the white light glowed brightly. Low on the horizon a full moon, still reddish orange, began to come up, but did not shed enough light to even cast a shadow. This was the time of the day tagged by the poet Longfellow as "The Children's Hour."

Then to the west, low on the horizon in the faintest afterglow of the sunset, a large bird soared on the breeze, ever wheeling closer. Just overhead at 20 feet, it paused in its wheeling and gave forth a spine chilling cry of the screech owl!!! Startled, I answered back with a throaty "Donald Duck Cry." That shook him! He folded his wings and dived. (A glitch?) Happy Hunting elsewhere, bird...

Still in the faint afterglow of a mild evening, the "Kurwi" was launched. As it travelled toward the "point", it followed the same invisible path taken so many other times during daylight. Suddenly the white light went out and the pencil-like profile nearly disappeared. Planning to take photos of the event (like a trace of light on the film... ala LIFE photos), I had my hand on the camera, ready to open the shutter when the Kurwi wasn't anymore!!! Applying back-stick and left, a glimmer of light in the distance, low on the horizon, located the Kurwi for me. The white light swept in a 180° arc and grew brighter as it approached the spot where I was standing. Holding a collision course on the transmitter and yet very cautiously keeping up air-speed to prevent stalling the unseen glider, I ran out of altitude about 20 feet below me, just on the edge of the crest of the hill where it drops off abruptly.

The breeze was still adequate but in



Another "Schliecher K-10" Sailplane, this one on rudder and elevator, scratch-built by C. F. Snow of Birmingham, England. His own receiver and clever amplifier board for two Bellomatic Servos. Rain water sloshing around in the equipment spoiled his chances to win.



Site of Annual Chester MFC's Slope Soaring Competition, near Liverpool, England. Wonderful view on sunny days, bleak at times.

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.09 or .15 engine
4 or 6 Channel R/C Operation

THE FASTEST AND EASIEST-TO-BUILD R/C MODEL EVER!

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ROYAL COACHMAN

AS FEATURED IN R/C MODELER MAGAZINE

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"TWIN FLOATS"

(Continued from Page 15)

of most full scale lightplanes and it is true of most models also.

As the modern multi channel R/C design is work enough, few builders ever get around to the necessary float construction which can become quite elaborate. Here in Holland, we have found the semi-scale "Edo" type floats presented here to be very easy to build, inexpensive and suitable for R/C designs grossing 8½ lbs. (A maximum of 10 lbs. gross, but less is preferred.) These floats are 3-feet long, and should fit well on aircraft about 4 or 4½ feet in fuselage length or thereabouts.

The design of good twin floats was long in coming, evolving over the passing years. The purpose of the floats is to keep the model safely afloat on the water, and to rise up higher in the water as speed and lift is increased, letting the aircraft lift into the air as efficiently as possible. The main problems to overcome are drag and suction.

Going back many years to the early days of aviation we find three-float set-ups, but the pilots of the day found these to be aerodynamically poor in the air, with excessive drag. The back of the floats had to be cut off straight to overcome water suction which contributed to their disturbing drag effects in the air. Further experimentation and

testing led to the omission of the tail float and a compensating addition to the rear of the main floats to achieve a more streamlined twin float configuration. In the "Edo" type float of today, we still find this basic shape, the portion of the float forward of the suction-breaking step forming the main body of the float, while the aft portion serves to replace the long-forgotten tail float.

With the early three-float set-up, the tail was lifted clear of the water first, then the main float. It is still the accepted take-off method, with the aircraft rocking forward on the forebody as speed is reached, further reducing

power-robbing water drag. It should be remembered that the aft portion of the float is there only to give balance to the aircraft at rest on the water. The center of gravity is over the main part of the float, just forward of the step. This position of the floats in relation to the center of gravity is very important, and makes or breaks a seaplane's take-off.

A flat bottom on a float gives a very rough ride on the water as a model encounters small waves and ripples, creating a power-robbing bouncing attitude. For this reason it is accepted practice.

(Continued on Page 45)



JUST 11 DIE-CUT PARTS

Suddenly you're FLYING!

... And it does every stunt in the book!

BEGINNERS MUSTANG

CONTROL-LINE MODEL

The world-famous World War II Fighter—now amazingly simplified for beginners! Die-cut balsa wing and tail makes assembly just a matter of minutes! NO TISSUE COVERING! Engine and control system installation now a snap for anyone because this kit includes aluminum motor mounts, bell crank and elevator horn—as well as finished landing gear, wheels, Air Force decals and assorted hardware. Plans and instructions are simple and complete.



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Engine .049

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Kit S-31

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KIT D-2
LENGTH, 22 1/2"



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KIT D-1
LENGTH, 24 1/2"

Magnificent Scale Realism! Prefab and completeness never before achieved in wood.

"BOOMERANG"

(Continued from Page 10)

site, an Enya muffler was deemed essential. Ed Hartmann further embellished this with his Exhaust Tailpipe visible in the photos, which ducts the slops overboard to phrase it in basic English. Helps keep the grit out of the engine too. As most models tend more toward the tail-heavy side than visa-versa, the weight of an optional muffler (and such tailpipe modifications) are often helpful in balancing, where lead ballast might have been required for trim.

As the day neared to fly the new beast, my feet grew cold. A multi bipe

is a lot of marbles, and the chosen morning had little to offer in the way of comforts. The December day dawned cold and windy, but that's normal for hereabouts so the grim caravan proceeded to the battlefield. (Close-mowed plush grass as far as bleary eyes can see. Like a golf course, which'll make you guys eat your hearts out.)

It was one of those days where the wind is something you lean against, and a shivering crowd collected to watch it all happen. At times like that, you've got to be nuts to fly. A good friend Tom Wenzell was elected to test it, having a lot of bipe flying to his credit.

We fueled the "Boomerang" with K&B Supersonic juice and flipped the engine to life. The plane trembled in

the wind, while my knees trembled in fear. The winds were gusting from about 15 to about 30 mph. First flight attempts were made via the take-off route, which is tough from a plush-soft grass surface. Not unlike roller skating in spaghetti. While the plane lifted off well enough on the first flight, the engine was set too lean and died a quiet death a few feet above the field, landing without incident. Further R.O.G. attempts pointed up the need for tighter rubber band lashing on the landing gear, as the soft grass was visibly pulling it rearward. This was a simple minutes work right on the field, but further flights were hand-launched due to the violent wind conditions. Still, the

(Continued on Page 38)



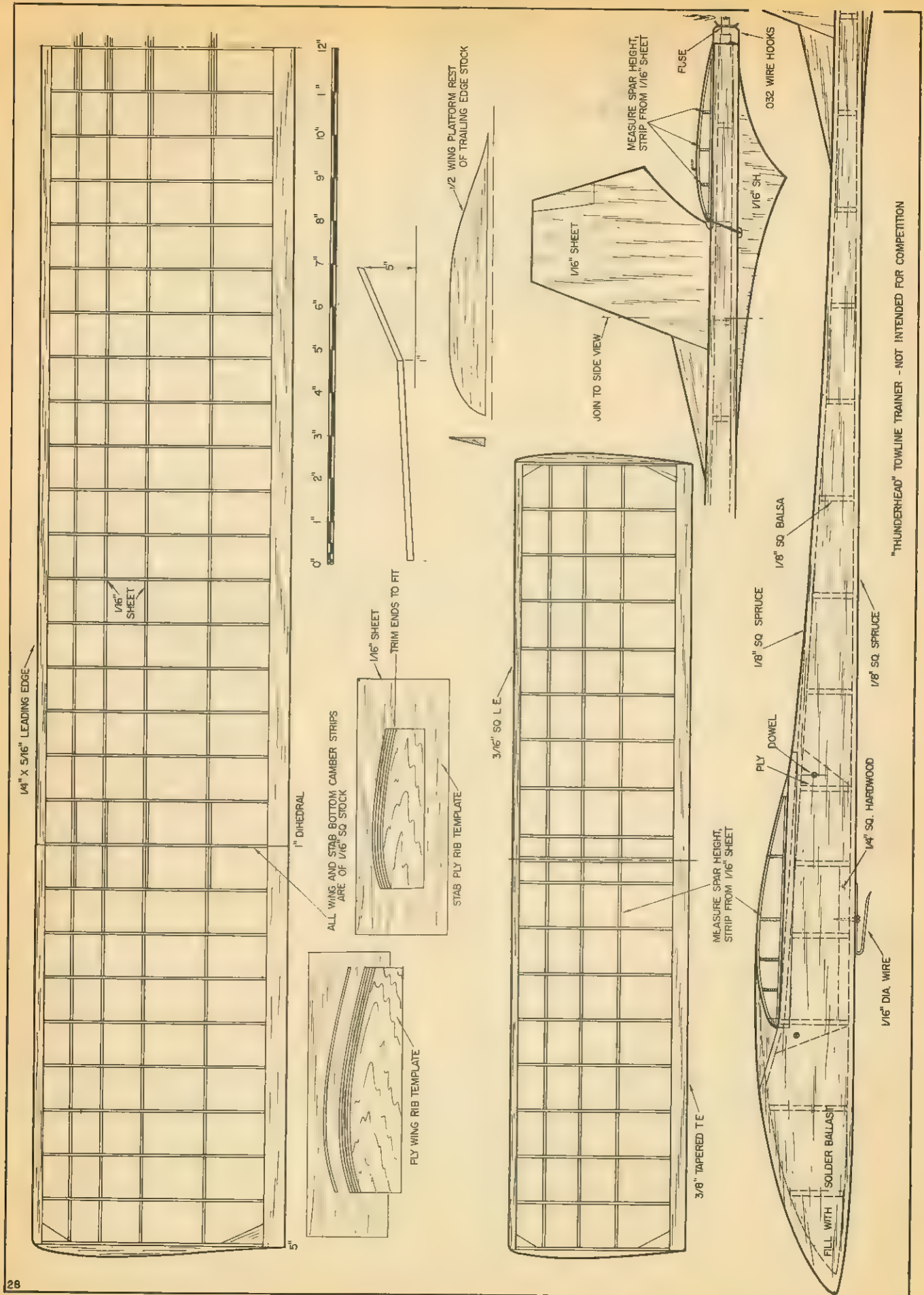
Hatch off, fuel bottle accessible. An Enya .60.



First takeoff, a maximum effort in soft grass.



George Haber launches "Boomerang" into gale.





This thin, lean machine sniffs out rising air, teaches you the rudiments of thermal soaring.



Don McGovern's

"THUNDERHEAD"

A towline trainer for thermal soaring . . .

Fast, easy to build, ribless wing design

FULL SIZE PLAN AVAILABLE

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"MODEL PLAN SERVICE"

◆ Like so much mashed potatoes, the big cumulous clouds build up in the summer's heat, the visible end result of the thermal convection currents at work on the earth below.

Over every hot baking field, great upwellings of air break away every few minutes, and form into an unseen tornado-like vertical current rising thousands of feet into the air. For the hawks and gulls it spells a free ride, and any day you can spot them whirling and wheeling effortlessly in the rising air.

Thermal flying . . . the greatest thrill a free-fighter is likely to encounter. Suddenly your model locks into one, it jumps noticeably, and starts defying gravity. In minutes it is thousands of feet above, and without your dethermalizer rigged and fused, you can pretty much pack up your junk and go home.

Some days they're weak, some days they are strong . . . but with a well trimmed ship in the summer, you had better not take chances. The thermal activity accounts for more lost models than you could ever count.

With your stab rigged by fuse or timer to "pop-up" and stall your wing after a few minutes of flight, the chance of a lost model is greatly reduced. This leaves you nothing but sheer thrills and flying fun. Until you have tasted the heady effect of riding these big

(Continued on Page 33)



With Model Builders...



◆ **Help Wanted:** No, we're not offering jobs this issue; just the chance for fellow modelers to help each other. The first plea comes from far-off Indonesia; the second, from closer to home.

V. D. Hediato, Chief Scout of the 17th Troop of the Air Scouts of Malang, writes of the short supply of modeling materials in Indonesia. His group works mostly with gliders and model rockets because these projects lend themselves best to the materials at hand. It seems that such things as motors, cements, dopes and sawn balsa are hard to come by. The lads usually go into the bush and cut their own balsa, but the stuff is of inferior quality. Model shops, as such, are simply nonexistent.

They are particularly anxious to get A/2 glider kits, Guillow's Workshop kits, and model rocket kits of the Estes or Centuri types. These particular types were chosen because of their educational value. In return, they offer Indonesian art objects, statues, carvings, batik clothes, and other items. They want to set up a barter system whereby they will be able to carry on their activities. Needless to say, if any of you have some particular wants, they'll do their best to fill them.

Write to: V. Diddy Hediato, Chief Scout, Djl. Kedawung 12, Malang, Djawa timur, Indonesia. Here's an opportunity to better international relations on a person-to-person basis.

The other opportunity is for U. S.



McDonnell R/C Fall Meet, St. Louis, Missouri. Fred Saunders gives last minute check to his DeHavilland Tiger Moth. Fred is from England, took 4th in Scale. Biplanes always draw a crowd when flown.

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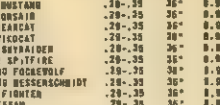
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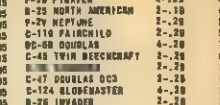
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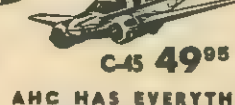
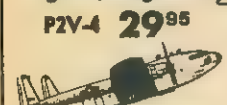
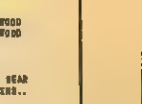
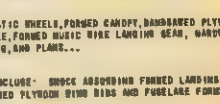
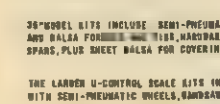
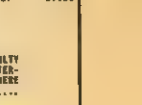
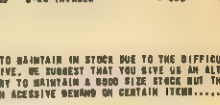
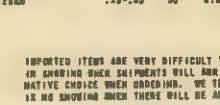
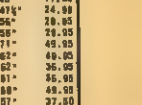
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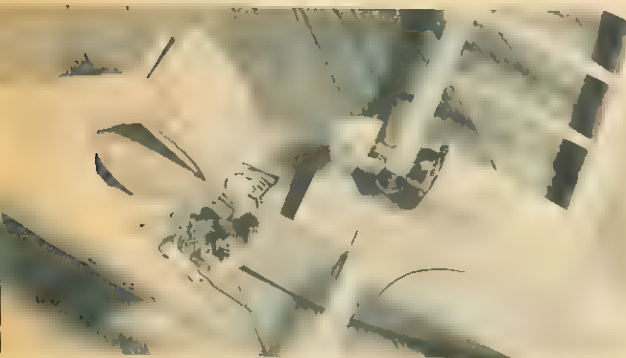
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Where are we aiming?
Pride of workmanship should be
an integral part of our R/C hobby . . .

One dedicated modeler's feelings
are well worth the reading,
feels ready-built aircraft are the route
to lesser things!!



LET'S BUILD OUR OWN!!

by Gene Rogers

♦ Radio Control modeling activity has been expanding at such a rapid rate the last few years, it might be wise for us to consider the reasons for our personal participation as modelers, and where the current trend is taking us.

Since we are part of the general public, we must therefore gain at least some degree of general acceptance. How does the public view us as radio control model enthusiasts? Are we a group of overgrown kids with expensive "toys" that are becoming a menace to life and limb? Or, on the other hand, are we an organized body of dedicated craftsmen and responsible flyers? I certainly believe we would get more general public acceptance and gain more personal satisfaction if we can consider ourselves as the latter.

With a growing number of modelers every day, the trend is towards spending as few hours as possible in the workshop, with the ultimate in being able to purchase their chosen model

displayed in a discount store. Their task would be reduced to opening the carton, charging the batteries, fastening the wing, fueling it up and flying it away. In the event of a smash-up, (even the manufacturers can't make them crash-proof) parts could be purchased.

Modeling in this manner can be very expensive and much less rewarding. In discussing radio controlled models with a non-modeler, the question is always asked: "How much does it cost to get a plane in the air?"...The answer usually puts him in a state of shock! My usual defense of the hobby (and myself) is that when taking into consideration the number of hours spent; both in the shop and in the field, the actual cost per hour of entertainment derived from this excellent pastime is quite reasonable. The very fact that we consume many hours in the construction (and very often in the design) of these models, the cost can be honestly justified. In purchasing a finished

model this is obviously not true.

With the mass manufacturing of any product, the cost to the consumer is always lower, however certain standardization of design also becomes a necessity. At the present time we have a wide variety of kits and plans available to us. Since we are building them, modifications of these designs is no problem. We have literally thousands of modelers seeking (and many developing themselves) new and more creative designs. Naturally some of these "home-builts" won't perform as well as a carefully manufactured airplane, but by the sheer numbers of minds at work and inherent spirit of the individuals, models will develop further than a single or even a group of manufacturers could attain on their own. When a modeler has a good idea, he is eager to share it with his fellow enthusiasts. This is not generally true with manufacturers, as they would not

(Continued on Page 47)



"BOOMERANG"

(Continued from Page 27)

ship flew perfectly from the start, steady, stable and scale-like in all flight attitudes. It shows promise of being a good acrobatic design, but, at the time of this writing the fields are snowed in, and flying awaits better weather. The cover shot was taken on another desert-like flying site, but further check-out flights this day were called off in favor of a trip to the nearest doc for a few stitches when my finger came out second best with the prop.

Without a doubt however, the "Boomerang" has fulfilled its design intention, that of a mild mannered aircraft, a stepping stone in your flight training program toward a fast, fully acrobatic biplane. It was first flown with the "Kwick-Links" mounted in the outermost hole positions on the horns for safety sake. These were moved to the mid-hole positions, as no performance or handling problems have been detected.

Fuselage Construction: The sides of the fuselage are cut from $\frac{3}{32}$ "x4"x48" SIG balsa (medium hard). Cut in the lower airfoil for the bottom wing. Do this very carefully, maintaining the 0° incidence in the lower wing. Also note that the stabilizer is at 0° incidence. Locate $\frac{1}{4}$ "x $\frac{1}{2}$ "x15" spruce doublers and cement in place. Locate bottom wing doubler, cut from $\frac{1}{4}$ "x3"x36" hard balsa sheet. Trace airfoil from fuselage side, cut out airfoil and cement doubler in place. Add the $\frac{1}{8}$ "x $\frac{1}{4}$ " longerons and

diagonals and cement in place. After all doublers, longerons and diagonals are glued in place, on the inside of the fuselage sides, glue the sides together, starting at the tail, using a $\frac{1}{4}$ "x $\frac{3}{4}$ " tapered block. For this construction I used only white glue. While the sides are drying, prepare all formers for assembly.

Start fuselage assembly with bulkhead F-2 through F-8. Add F-1 plywood firewall. Do this very carefully as the fuselage must be lined up perfectly. Strip plank top of fuselage with $\frac{3}{32}$ "x $\frac{1}{4}$ " capstrips. Sheet the bottom of fuselage with $\frac{3}{32}$ " sheet balsa. Add $\frac{3}{4}$ " hard balsa block to nose of fuel and battery compartment. Epoxy motor mounts in place. Cover fuselage with Sil-Ron and dope.

Cabane Construction: The cabane structure is fairly easy to make, however it must be made accurately. Trace the cabane struts from the plan and transfer to $\frac{1}{4}$ " Sig plywood board. After both cabane struts are cut out, match and clamp them side by side and sand to finished size. Locate cabane in fuselage as shown and epoxy in place, then pin cabane strut in place using $\frac{3}{16}$ " hardwood dowels (see detail "C" on plan.) Next cut out cabane strut brace and notch as shown, epoxy strut brace in place. Cut out (16) $\frac{1}{8}$ "x $\frac{1}{4}$ " plywood gussets and epoxy in place (as shown). Add (4) $\frac{1}{8}$ "x $\frac{1}{4}$ " hard spruce strut. Epoxy in place and cap with $\frac{3}{32}$ " plywood gusset as shown in detail "C."

Hatch Construction: There are many ways of making hatches. I think you will find this method simple and strong.

(Continued on Page 35)

"THUNDERHEAD"

(Continued from Page 29)

booming currents, you haven't lived. It makes glider flying the sport it is.

A/2 Nordic soaring is a glider event for the best of competition. Beautiful graceful gliders that sense-out every breath of rising air, and make the most of it. Trouble is, these refined aircraft tend to discourage inexperienced builders with their intricate wing structures, undercambered airfoils, and reliance on grade-A-perfect wood for assembly.

The "Thunderhead" Soarer is not an A/2 in this sense, not intended to best the competition, nor is it in the same league at all.

It is a fine trainer. A less-complex soaring glider of ample proportions, with a flat-bottomed airfoil and squared off wing design. It is intended as a more easily built design with which you can gain an introduction to the sport, and formulate a few of your own opinions as to what next to build in the way of a contest machine.

The wing could not be easier. While it appears well-ribbed and complex, all ribs are stripped from sheet with one simple template, and spars cut from sheet to the heights required. It makes a light, strong wing, easily assembled in one day from start to finish.



The "Boomerang" Biplane

Full Size Plans



MPS 56 - BONG-BOOMER FAI R/C Glider	Maynard Hill
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MPS 58 - ONE GRAND C Gas FF -	Dick Mathis
Uses K&B .40 RR Engine, 80-1/2" span HUGE!	2.50
MPS 59 - BOOMERANG BIPE R/C Multi	Wally Zober
For .60 engines, Full house radio Mar 67 FM	3.00
MPS 60 - ATHENA - A/2 Glider design	Roger Simpson
Winner of Open Class 66 Nats - 80' span	1.50
MPS 61 - ME-262 Semi-Scale C/L	James Vornholt
Uses .35 or .40 engines - 55" wing Mar 67 FM	1.50
MPS 62 - SEMI-SCALE EDO FLOATS - 36'	Wil Aarts
Twin Floats for R/C up to 8-1/2 lbs - all balsa	1.25
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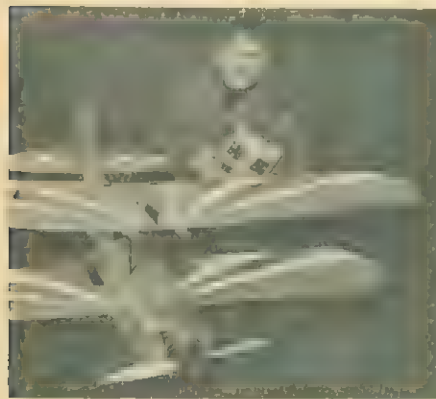
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Stabilizer likewise is built in the same manner, flat on bottom, light and simple. As on the wing, all spars are internally mounted, and do not mar the covering tissue.

The fuselage plan speaks for itself. Super-simple for fast assembly, yet attractive in line and practical in design. The rudder fin is of sheet and underslung to keep clear of the "pop-up" stab dethermalizing action. Fins attached to a stab run the risk of losing flight trim adjustments if knocked askew.

It all adds up to a beautiful flying machine, well equipped to let you sample the rising air. Not the ultimate machine perhaps, but a good place to start in this part of the sport for want of a less-complex test ship.

Build the design with care, selecting the best of the lumber at hand for the wing edges etc. and work in a neat, orderly manner. Good firm cement joints are a must, and get in the practice of pre-coating all end grain before the final cementing and installation.



Son Steve on hand to help, an avid glider fan.



Angled pipe spews burnt oil away from fuselage to splatter on lower wing instead. Can't win!!

**jim
walker**
firebird
half the building
twice the flying
see your dealer
soon!

Check balance and alignment trim carefully, sighting for warps that may have appeared. A few drops of castor oil in each jar of clear dope will lessen the warping tendency. Those that do appear can be steamed-out over a steaming tea kettle. Twist in the opposite direction, and hold till cool. Repeat to adjust as conditions warrant.

Flying: Calm air is what you need. A spool of button thread at least. A wire ring on one end that slips freely off the hook. A square of light silk cloth (colorful) to drag the towline clear and aid in finding the end on the ground.

Test glide and trim the model for a floating bouyant glide, with not more than a trace of a turn. Add clay ballast, incidence shims, trim tab adjustments and alter warps as flight attitudes suggest. When the model glides free of stalls and dives, in a slow sensitive manner, it is time to try it on the tow.

Start with about 75 to 100 feet of line, and have your helper guide the model on its way, taking a step or two forward with you. He must not shove the model, as this upsets the launch and drops the towline off the hook.

Run slowly with your eye over your shoulder on the model. It should start to climb at a reasonably steep angle, and climb to $\frac{3}{4}$ (or better) of the total line length used. If the "Thunderhead" aims up too steeply, shift the towhook position forward. If it fails to climb at a reasonable running speed, move the hook rearward. If it tends to circle off the climb, offset towhook on that side to counter the tendency, lessen the turn trim, or shift the inside-turn wingtip forward a trifle. Another technique you can use to advantage is to quarter-off the model in relation to the wind, making the model try to swing against the breeze a few degrees.

As a further refinement, install an "Auto-Rudder." A small tab is spring loaded against a neutral stop, giving normal glide circle. A thread then passes from a horn attached to this tab, to the towhook. The towline ring is next slipped on, and pulls the tab to a position that neutralizes the glide circle. Thus you have neutral turn on the towline, and instant glide circle for thermal-seeking once line falls free. ●

"BARAGRAPH"

(Continued from Page 16)

a half that it stood as the official record. But unfortunately, no altitude measuring equipment was around at the time. The Navy's radar is a marvelous way to do this, because you just fly the model and it tells you how high you are. Although the Navy is very foresighted and recognizes that our country and the Navy benefit by their helping to promote public interest in model aviation, they do have other things to do with their radar. So once a year is about all we can hope for on this kind of help. We did try glider altitude at the Dahlgren Naval Weapons Lab one day in September 1965, but the weather man was uncooperative. It doesn't take a brilliant statistician to figure out that the odds are poor for coming up with good soaring weather on a day that must be scheduled weeks in advance.

So when the weatherman didn't cooperate, the DCRC moved to another tactic that we thought would have better odds. We went flying at Westminster, Maryland, with some friends we'd made in the full scale soaring glider club that operates there. The principle was that they'd point out the thermals and if we got a model up, the C.D. and observers would jump into their tow plane and go up to fly under it. The first thing that happened is the big gliders started at 2000 feet and wandered several miles from the field to find thermals. They were little help. Then when we did find a thermal by ourselves with several models, the chase plane couldn't find them in the air. A two way radio would have probably done the trick that day in October 1965.

Winter came on like thunder, and in cozy contemplation around the fireplace, it became obvious that next summer a barograph in the model might be the way to do it. This would require a big model. But then it was also obvious that even with 20-20 vision a big model could be flown higher than a little one.

So a big glider ("Bong-Boomer," Feb. issue F.M.) and a barograph were put together. This altered the circumstances, so that the only problem left was to round up a crew on the right day. Now the odds were better. A number of tries were made during the spring and summer of 1966, but thermals seemed very scarce at the new field the DCRC had acquired.

A good free-flight contest is still one of the most pleasurable things I know of, and I was not going to miss seeing the FAI Team Selection Finals at Bong Air Force Base, held just before the Nats at Chicago. Floyd Miller, the organizer and director of this meet, had done an absolutely beautiful job in the preparations and, as it turned out, it was an exceptional contest of the country's best flyers. My son and I had no planes to fly at the Chicago Nats—and we were going out just to see the FAI show and pitch in on a few chores. But at the last minute, the big soaring glider was put into the car because of

a vision I had of a sky full of free-flight models. Man, with 70 of the country's best thermal seekers there to help, how could it possibly miss? It didn't!

Floyd Miller, being a thorough C.D., didn't let us fly over the contest area for reasons that we might act as a thermal spotter to the contestants. But Dale Willoughby and I benefited tremendously from being aside of all that activity—to say nothing of the help provided by some of the experts on how to stay in thermals.

3,660 feet is far from the limit of where a big glider can go and just in case you have a yen to prove you can go higher, this article is intended to give you a general idea of how to construct a barograph. Even if you don't care to go after a record, it's a fun type gadget to strap onto any R.C. plane to see what it's doing.

Construction does require use of a metal lathe and a drill press for several parts. The main frame was made from a strip of 1/32" thick aluminum that was bent into a channel shape on a sheet metal break. A roofing or heating contractor can do this for you. Similar channels with holes in them for adjustable stores. The channel was notched with a Zono saw at each of the corner able shelving can be purchased at hardware positions and then bent into the rectangle shown. Small diagonal pieces were spot welded on the corner to stiffen the frame. These could be fastened with sheet metal screws if you can't get them spot welded.

The aneroid bellows unit was obtained from some radio sonde units purchased from a surplus house that's since run out. Hopefully, there are other surplus houses that might have them. A friend in the weather bureau might find some in the scrap bins for they use a lot of them on weather balloons. You can also get some good ones from surplus aircraft altimeters. Each radio sonde contained only one evacuated aneroid unit. Two of them were ganged together by using a lathe to turn down and cut off the threaded stud on one so it fit snugly into the well of the other. The stud and well were tinned with soft solder, then a piece of 0.020" nichrome wire was wrapped around the well to heat it to the melting point of the solder. Nicad starting batteries were used to heat the wire. Presto, when the stud was inserted, we had a double bellows aneroid that moves about $\frac{1}{8}$ " when placed in a chamber at a pressure equal to that at 20,000 feet of altitude.

The drum used in this unit was made from a 2 1/4" diameter cardboard mailing tube. The metal end closure on this served as a mount for the clock drive. The clock drive was removed from a cheap travel alarm clock. Many varieties of these appear to be available for about \$3.98 in the local discount stores. But when you get inside of them, they're all very similar. The alarm unit can usually be removed by filing off two riveted studs or by sawing away parts of the frame. The nuts that hold the assembly together can temporarily be

(Continued on Page 36)

FLYING MODELS

"BOOMERANG"

(Continued from Page 38)

Tack H-1 and H-2 in place on the fuselage with small amount of glue. Cap-strip together with $\frac{3}{32}$ "x $\frac{1}{4}$ " soft balsa. After hatch has dried, saw it free from fuselage.

Tail Surfaces: There should be very little difficulty in constructing these units as they are fairly simple. Lay out frame on plan for stabilizer and elevator. Add ribs and diagonals, tips and cement in place. Cap center-section as shown with $\frac{1}{16}$ " sheet balsa. Note elevator tips must be accurately cut and free of warps. Same construction for rudder and follow plan closely. Epoxy rudder and stabilizer to fuselage, making sure that the stabilizer is at 0° incidence and that the rudder fin is perpendicular to fuselage. Cover with Sil-Ron and dope.

Wing Construction:

Top Wing: Cut out all ribs using an accurately made template. Sand all ribs together and cut out notches for spars. Cement the rib tabs on every third rib, using rubber cement. This will be removed later. Note there is no dihedral in the top wing.

Use extremely flat work table, pin $\frac{1}{4}$ " square spruce spars over plan, place all ribs on spars and cement in place. Add top spar, leading edge, trailing edge and rear spar. Cement in place. Add $\frac{3}{32}$ " vertical webbing to forward spars and cement in place. Sheet top of wing as shown. Remove wing from bench, turn upside down, add $\frac{1}{8}$ "x $\frac{1}{4}$ " spruce rear spar, then add vertical webbing. Sheet bottom wing with $\frac{3}{32}$ " sheet. Sand leading edge round, sand wing, cut out wing slots for rubber bands. Cap all ribs top and bottom and cover with Sil-Ron and dope.

Bottom Wing: Construction is the same as the top wing, except for dihedral and aileron cutout. The wing is made in two sections and joined together at center with double ribs. Dihedral is established by raising one wing tip up $\frac{1}{16}$ ". Join wing panels together with epoxy, sheet top and bottom of wing, cap all ribs top and bottom. Cut out ailerons as shown on plan. Add aileron beds of $\frac{1}{8}$ " plywood and cut out slots for pushrods. Sheet wing tips and center-section top and bottom as shown on plan. Cut out center-section for servo and add $\frac{1}{8}$ " plywood for servo bed. Install aileron bellcrank and pushrods before covering. Cover wing with Sil-Ron and dope.

Now it's time for your knees to start knocking. Don't just stand there, start it up!



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CHANNEL CHATTER

(Continued from Page 20)

design for a crack at the R/C power duration record. He found an old Duke Fox "Buzzard 144" R/C glider kit (there are some still around) and having built it according to plans, installed a K&B .45. Then this engine was replaced with an Super Tigre .15 when it was discovered that it would fly the MONSTER even at full load. A one gallon plastic bottle was used as a fuel tank. A two-ounce plastic bottle was inserted between the gallon tank and the engine to equalize the head of the main tank. The Super Tigre .15 would run through the complete one-gallon fuel tank no matter what position it was placed in, either above or below the engine. With this set-up, most of the fuel-feed problems were eliminated, and the small equalizing tank was not vented. Bill says that he thinks a glider-type aircraft and a small engine is the answer to world record attempts. As of the date of this writing, he has to beat Maynard Hill's record of 8 hours, 52 minutes, 25 seconds with a 2% margin. I never did get the details on the Texans who flew their R/C distance model some 92 miles, just four miles short of the declared goal. Details, anyone?

Moose Lodge-RCL Contest

● Normally one thinks of an R/C contest for those who are competing and never any profit motive involved in holding a contest. Not so with the Second Annual Moose Lodge-Radio Control League of Orange County's contest held last November. The contest was specially designed to make a profit, so that half the proceeds could go to help the MooseHart (an elderly home) patients live better. Len Kincaid, the Contest Director, also raffled off an Orbit 7-14 Digital system to help bolster the funds. This was a good contest with 21 Good-year Pylon entries (won by Chuck Hayes—see photo), and 16 R/C glider entrants. Other events were Open Pylon, Scale and original design. There were over 60 entrants for this contest, which was postponed a number of times

due to conflict with other contests in the area. At the very end of the contest, during the prize-giving, the owner of the Sandwich truck donated \$75.00 toward the MooseHart fund. Colonel Cruger L. Bright, USMC, was on hand to award the trophies, which were large, beautiful ones donated by various and sundry manufacturers and hobby shops. (See photos). Crowd control was effectively maintained through the use of Cadets of the local Civil Air Patrol squadron, headed by Capt. G. F. De Montalvo. Weather was ideal and a good crowd showed up both days to watch.

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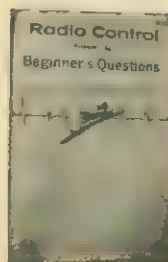
NEW 1967 CATALOG FROM ACE R/C

● Just received Ace R/C's 60 page catalog with over 1,300 items listed. These range from Kraft proportional systems to the smallest transistors and capacitors, kits, plans and many hard to get items for the "do-it-yourselfer" and experimenter. A complete index is provided on the back cover and the items are arranged by groups for easy location. Ace has a unique policy of money back if not satisfied with either their merchandise or the prices, if returned within 7 days from date of re-

(Continued on Page 37)

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Line-up of R/C Soarers competing in recent RCL Moose Lodge 2nd Annual meet. First three are Kurwi's, a Sea Breeze, Imperial 100 Zues and Tom Laurie's original. Gliders offer fine change of pace.

THE "ZEPHYR"

(Continued from Page 25)

positioning the light I had placed it on the top where the tail, when the glider in a nose-down attitude, blanked out the light. The full moon was still too dim to be of any help, and it was then close to 9p.m., so I took some time exposure shots and drove him. Some lessons to be learned and heeded. Three lights are necessary to maintain directional control. The best locations would be as in a real aircraft . . . a white light on the top, a blinker on the bottom, red on the left wing tip and green on the right tip. Also, if trying to fly at night, be sure there is an extra amount of wind blowing, as cool air does not provide the same corresponding lift as the warm air in the day time.

Slope Soaring in the Rain

Clwyd, Northern Wales: Last July, rain postponed the Annual Slope Soaring Contest, sponsored by the Chester Model Flying Club, so it was rescheduled for September. Through the kindness of Dave Hughes, who writes the

"Strictly for Soarers" column in that excellent English publication—Radio Modeller—the following is a summary of the meet. Incidentally, Dave also took the photos and sent me the negatives. Even though the second time it rained, as luck would have it, they waited until noon, then decided to proceed anyway, and had such variable conditions it was pretty much "Pot Luck" for the contestants. The weather ranged from flat calm with a light drizzle—to periods of light breeze with no rain—to squally conditions with heavy rains. Then after the contest was completed, the winds resumed normal strength.

Over in Britain, they fly two classes of R/C glider competition. Single surface and multi. Multi can be anything that is not Single. Additionally, they fly two rounds, the first is aerobatics and the second is speed . . . though not actually called by that name. They must fly the glider between two flagmen situated at appropriate distances at each end of the hill in four minutes. However, there is a penalty of one point per second for each second over 240, and they count

(Continued on Page 40)

"BARAGRAPH"

(Continued from Page 34)

removed and then used to fasten the clock to the inside surface of the metal end closure of the mailing tube. Appropriate holes must, of course, be drilled to accommodate the winding key and other protruding parts through the end plate of the mailing tube.

An extension shaft must be machined and then soldered to the gear that normally drives the hour hand of the clock. The end of this shaft is drilled and tapped for a 4-40 screw. When this screw is eventually turned tight against the frame, it locks the shaft to the frame. Now in operation, the clock rotates around the "hour hand" instead of the hour hand rotating around the clock. It takes 12 hours for one rotation of the drum. An alligator clip fitted with a small piece of $\frac{1}{8}$ " brass with a $\frac{1}{16}$ " hole serves as a spring release for the other bearing. The shaft of the clock that originally had the knob on it for setting the hands must be sawn off to fit into this bearing.

The needle and pivot of one of the radio sonde units was used as the writing pen. This writing pen should be mounted so that the drum rotates away, not toward the needle point and pivot bearings.

The above description is only to give you some ideas—and if you don't obtain exactly the same radio sonde units, you will have to innovate as you proceed. The best procedure is probably to round up whatever clock, aneroids and mailing tube you can get and then proceed with the principles outlined here, but perhaps ending up with some slight changes to the shape of the frame.

The little spring that is visible in the photographs is a vital component. Whatever radio sonde or altimeter you get, you'll find they have such a spring appropriately positioned to pull on all the bearings to remove the slop. If you skip it, the unit won't read the same during climb and dive and it won't come

Junior technicians in RAF, Jim Wheeler, Chris Osborne built this Amigo II. British RCS 10.



back to zero when you land. That's unacceptable.

Aluminum foil can be used on the drum to make permanent records. A stiffer foil such as 2 mil brass or cold rolled steel shim stock is better, for then there's no tendency for the needle point to dig an erroneous groove. Clear Scotch tape is used to hold the foil to the drum. Carbon smoke is deposited on the drum, using the sooty flame from a small piece of camphor which you can get at a drug store. This deposit is very easy to write on—it takes no pressure of the pen point at all. In fact, you'll find it too easy to write on—it's very difficult to handle without getting fingerprints and scratches on it! Just in case you're thinking you might use ordinary paper and a ball pen, forget it! You won't have enough push available to do that.

Calibration is a job that might give you a little trouble. You'll have to find some friend who is willing to put in some overtime in a laboratory that owns a vacuum pump and a bell jar. The barograph can then be put into the bell jar along with a calibrated aircraft altimeter and pumped down to various readings on the altimeter. If you hold at various pressures, you will get a trace similar to the one shown in a photograph here. When you finish the calibration, you can make the trace a permanent record by spraying it with clear lacquer or dope. The needle deflections can then be read off with a draftsman's dividers—or if you have access to a high class machine shop, you can do a far more accurate job on a device called an optical comparator. This lets you measure on an image that's magnified 60 to 100 times.

The graph for the calibration shows this particular unit to be a fairly accurate instrument. It is reproducible to within about ± 20 feet when an optical comparator is used to measure deflections. This is equal to the accuracy of a good aircraft altimeter. However, the line itself is about 80 feet wide, and the accuracy with dividers is no better

(Continued on Page 39)

CHANNEL CHATTER

(Continued from Page 35)

cept. Because of the volume buying, the individual electronics bits and pieces are priced right near those of the large wholesale houses in the electronic industry. Dealers who stock the major portion of Ace R/C's inventory are listed on page 3, and serve as a guide to the nearest source of supply for the catalog items. This catalog can serve as a ready reference of what is available for the experimenter, likewise the beginner, and is available for one dime from Ace R/C Inc., Box 301F, Higginsville, Mo., 64037. This catalog is especially invaluable to the overseas reader as most items listed are also pictured, with a fairly detailed description of the items offered. Once on the mailing list, supplemental sheets are mailed throughout the year announcing new products. How can you better spend a dime?

New Multi Unitized Fuselage:

● In these days when foam wing and stab kits and completely finished, wings are available to get the R/C fan into the air as quickly as possible, it was a natural for someone to experiment with something else besides fiberglass fuselages. Hamilton Enterprises, 19045F East Alford Street, Glendora, Calif., 91740, now offer a one piece unitized fuselage composed of plywood and laminates. This fuselage weighs 18 ounces, makes provision for a 17% wing section in the saddle, and through this opening, easy access is obtained to fuel tank, battery pack, front wheel steering arm (nylon tubing with front bearing installed) and motor mount nuts. The engine compartment is of the open style for easy adjustment and refueling, with the fuel feed-line drilled and the engine compartment epoxy-coated. The slab stab and vertical fin are detailed on the instruction sheet, with a pull-action elevator design and very practical vertical fin installation indicated. The Jensen Enterprises "Kwik-Fli" wing and stab kit are

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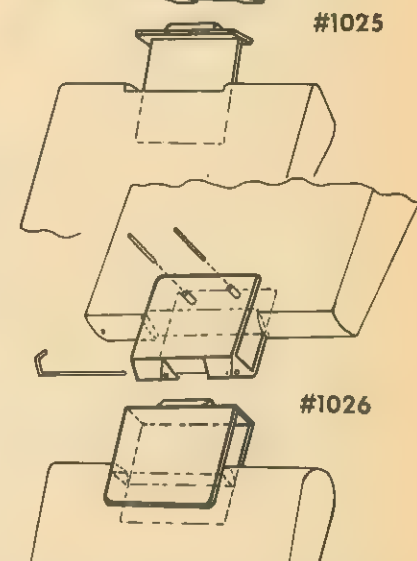
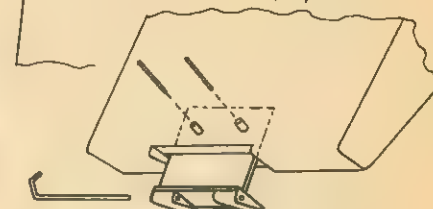
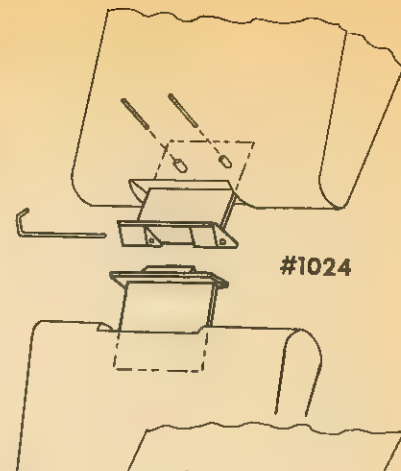
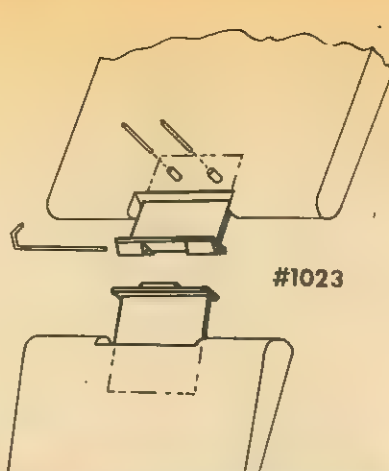
Herb Abrams of Rand Manufacturing Company, Detroit, Michigan, mailed some samples of the new Hinges that looked so neat and useful that I immediately sent him money for a complete set for a new glider design nearly finished. These Rand hinges come in four sizes which should just about cover ev-



Larry Davidson's beautiful machine came to grief. Enya .60 power, a Quadruplex 5 channel system. Photos in order: pouring the juice to the plug; the last take-off in its future; an inverted pass to curl your hair; and the landing . . . the "hard way." Pilot error, pure and simple. Tried to teach friend to fly it, called for "up" to correct diving attitude. A transmitter held horizontally offers full-scale control action where "up" is back on the stick. A transmitter held vertically in strange hands is confusing in this respect, for "up" is down on the stick, and for down you push up. Result is wreckage.



ery need in modeling, and not only R/C but other model uses. While I have been using straight .006" mylar hinges, the "set" in a curved roll (from which I cut my hinges) makes the hinge one sided until cycled several hundred times. But with these RAND hinges (see cut) there should be no bind. Also the flange effectively seals the edge of the balsa and keeps the epoxy or glue from binding the hinge. They come in four sizes at six for \$1.25, i.e., 1/4" and 5/82" neutral (center) axis, 1/4" top edge axis 5/82" neutral axis double flange hinge. With this assortment of RAND hinges available, any thickness of trailing edge material from 1/4" down to 1/8" can be very easily hinged.



Several other new items are the Jimmy Bag @ \$2.50, Swing-in Keeper for control rod hook-ups which are 4 for \$.60, Aileron and Elevator Horn bearing on the same principle as the Rand Hinges at four for \$.75. All these are destined to be displayed on an accessory peg board called RAND RACK, which is bright orange. The Jimmy Bag is for protecting the transmitter (any size) from dirt, is made of washable red flannel and has a draw-string at the top (see photo).

Also Rand Manufacturing announced a new breakthrough in the concept of Galloping Ghost actuators. Since the introduction of the RAND HR-1, HR-2 and LR-3 actuators which require a center-tapped battery or a switcher to eliminate one set of batteries, there has been a growing demand for an integral switcher combined with the actuator. Rand has gone one step farther and provided a wiring harness, complete with switch, to go with the 3 cell General Electric self-sealing nickel cadmium battery pack. These cells are spot welded together and because they are vented, are much less subject to damage (bulging) from over-charging. Rated at 600 maH they are

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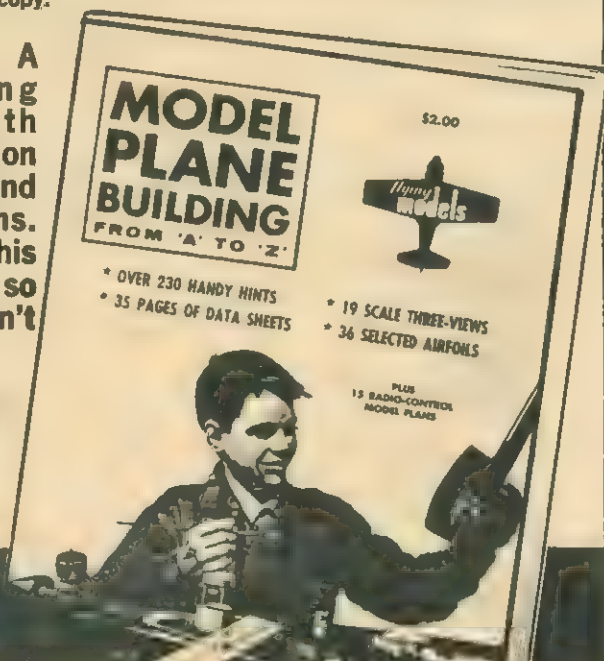
Here is a fact-filled handbook, which is handily indexed so that needed information can be found quickly. It's aimed to encourage modelers to solve day-to-day problems with indications of alternate ways to do things. Clubs and schools will also find this a handy text. The kit builder and scratch designer alike shouldn't be without a copy.

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efficiently coupled with a low drain motor drawing an average of 350mA, and will operate the RAND GG PAK continuously for 1½ hours. This means about four hours on the field, if you take turns and share frequencies at all. The best news is that while you can use the RAND GG PAK with a relay receiver, you can also use a relayless receiver and eliminate problems of dirt, vibration and adjustments. With a Kraft (or similar) 3-volt receiver, this GG PAK can be used as a single battery source. Weight of the RAND GG PAK is about six ounces, and each component has been specifically matched as compatible with the other part. This spells reliability, convenience in installation and economical operation. At the time of this announcement, considerable effort was being directed to include a battery charger with the RAND GG PAK. Whether they can keep the price at \$39.90 and still add the charger remains to be seen. I predict that this compact and economical GG PAK will materially assist in the progress of Class I and Class II flying.

● Orbit to release 2 channel and 3 channel digitals in the Spring of 1967. Both are proportional systems and will be available in the 70 megacycle frequencies, as will all other current Orbit systems.

The 3-6 is a three channel six function system for the sport flyer, Class II competitor, high performance glider and racing sail boat.

The 2-4 is a two-channel, four function system that will be welcomed by Class I rudder-only and slope soaring and glider flyers. High torque servos will make the 2-4 perfect for high performance power boat fans as well as sailing enthusiasts and R/C car modelers.

Both 3-6 and 2-4 will incorporate the latest solid-state Orbit circuitry; small, light-weight, vinyl-clad transmitters and new super-heterodyne receiver.

● Sawn Craft R. C. Field Box is among the finest field box on the market because it was designed with the active modeler in mind. There are two separate full depth compartments. Either will hold a gallon fuel can, while the other may be used for the transmitter and starting battery. There are four full depth drawers, each of which is large enough to hold hand tools or a goody box. The full depth full width drawer at the top is made for propellers and antennas. Beneath the bottom drawer is a shallow compartment for rule books and licences. The top of the box has rails on each side to prevent tools from rolling off. The door opens to a supported horizontal position and may be used as a work stand for field repairs. There is a set of dowels and riser blocks that may be used as a plane caddy when installed in the holes provided in the end plates of the box. The legs which are secured with wing nuts fold flush for stowage.

The materials for this unit have been carefully selected to provide the best

quality with the least cost. It is mainly built from pine with fir plywood (marine) and hardwood legs. All the hardware is plated and the kit is complete with glue.

"BARAGRAPH"

(Continued from Page 37)

than this. With the comparator, you can make all measurements on one side of the line. Using dividers and a preliminary calibration. We got a reading of 3,550 feet at Bongard this was intentionally conservative. Then after an official pressure calibration, we got 3,770 feet using dividers—and finally, with the comparator, the record claimed was 3,660 feet. This number is conservative, but it is the proper one of the three.

To get the barograph certified for a record, you would, of course, have to get it calibrated by some recognized laboratory—preferably in the presence of at least one official AMA contest director and one observer. Most U.S. Weather Bureau Stations have such equipment and the people in them are mostly very cooperative on efforts like this. The barograph should remain sealed or in the possession of a contest director until it is officially calibrated.

The unit shown here was cycled from -20°F to +120°F and found to have a very small drift in a direction that subtracts altitude in real flight. It would have been more accurate to claim an extra 20 feet for this on the Bong flight—but this seemed unnecessary.

The trace of the flight at Bong is also shown in one of the photographs. We nearly missed this record because the carbon smoke was marred while the drum was being inserted. Fortune was with us though, for the trace to peak altitudes occurred in an unmarred portion. The full trace of the flight can be seen in spite of the rubbed section and it shows we got about 600 feet on the tow and sank back to about 300 feet before finding strong lift that took it to about 1500 feet. We then sank back to about 900 feet before finding the big one under a cloud. This one seemed nearly dissipated at 300 feet, but we moved over near the edge of the cloud and hit a final burst that took it up into the cloud base at 3660 feet. From there, the trace shows we dove pretty fast to bring the barograph home.

The total weight of this unit including the balsa covers is about 6 ounces. There are commercial units available for full scale soarers that are slightly larger—and they weigh about three pounds. They're also a bit expensive to risk crashing in an R.C. model. If you have a yen for tinkering, you'll find it's not too difficult and a lot of fun to build a gadget similar to this. If you do, you're in for some real fun at the flying field.

This unit was recently used in a power altitude model to good advantage in some tests aimed at finding the proper needle valve settings for high

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altitude. We finally found them, loaded the model with gas, and climbed for 45 minutes only to lose the model from the view of the telescope on the way down. We haven't seen it since! Our best guess is that, somewhere at the bottom of the Potomac River, those big channel crabs are chewing away on a model called "Stretcher" and a barograph that was pegged to its upper limit of 20,000 feet. And there is what surely sounds like one of the biggest "fish that go away" stories ever told.

If any of you find a good source for aneroids, would you please let me know. I'd like to put a new piece of bait on my hook and go fishing again.

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THE "ZEPHYR"

(Continued from Page 36)

portions of a lap. I think the glider must be landed as close to the four minute mark as possible. In aerobatics, they also give a four minute time limit and in that time are awarded points for the following maneuvers:

Inside loops—Maximum of
three _____ 10 points

Roll off top—Maximum of
three (Immelman
turn???) _____ 7 points

Outside loops—Maximum of
three _____ 15 points

Spins _____ 3 points per full turn

—Four minute time limit on Aerobatics also.—

There was an exceptionally good turnout . . . 30 entries in multi and 26 in Single. Since there was practically no breeze, the Chester MFC officials decided for a straight duration contest for the Single entrants. The hill is a gradual slope (see photo) and so again a four minute time limit was imposed, but the glider merely flew down to the bottom of the hill. On the second try in Single, the lift increased to the point where it was no longer marginal, so the event was re-adjusted to speed. Just shows that you cannot command the weather at contests. It was interesting to note that a number of R/C gliders had troubles with the rain getting into their equipment. Dave reports that it may be possible to have a British "Slope Soaring Nationals" in 1967, providing the details are thrashed out in time. Personally, we hope they hold it the last week in June! And somehow I personally think they should embody additional events as "Climb to altitude in four minutes" and "Spot Landing" in their schedule.

New Yorker Developing Hand Launched Glider Design

Bob Neubauer, of Rocheser, N.Y., writes of his glider development program and parts of his letter are quoted:

"I'm in the process of designing through theory and trial and error (mostly error) a Hand Launched Glider design to end all H.L.G.s!! After five variations on two airframes, here are a few conclusions: (1) a polyhedral wing (3-V breaks) appears to have better roll recovery than V-dihedral but beware of highly tilted wing-tip panels as I believe they promote tip stalls which defeat spiral stability, (2) the use of sweepback is suspect, i.e., about ten degrees or more—the one I built with two degrees of sweep had better recovery from launch and also gets good altitude, (3) was unable to get a flat tight circle in the glide with a single flying surface adjustment, i.e., the rudder. It seems two are necessary, rudder plus some adjustment in wing lift or balance to keep the inside wing up in the turn. My theory is that conventional construction applies the rudder's yaw force too far below the center of lift which creates a couple that forces the glider into a steep bank. Regarding "Zephyr," I am looking forward to an account of

your Hi-Start experiments and please tell more about gliders with stalling wingtips that seek thermals more efficiently. You have one reader, at least, who is interested in the results of other designers including their problems, data, airfoils, etc. Be glad to have anything you may send this way on glider groups, newsletters, local enthusiasts to write to (which would enlarge my circle of contacts), and comments on my experiments are solicited. . . . Bob Neubauer" Bob did not include his address in his letter but I think he can be reached by phoning 671 4483 in the Rochester area.

Info from Czechoslovakian Modeler

● On page 47 of the November 1966 issue of Flying Models we printed a photo of Vladmir Stefan's Czechoslovakian R/C glider Record holder. Since that time he wrote further of how he set the record and the surrounding circumstances as follows:

"I am very pleased to receive your letter with photos for which accept my thanks. I almost did not hope that somebody would answer, because there passed a half a year since I wrote my
(Continued on Page 44)

MODEL BUILDERS

(Continued from Page 30)

Free-Flight modelers to help themselves. Now, you all know about the National FF Society and the national figures behind it. The organization has gone through its first year of growing pains and has great plans for the years ahead. However, if these plans are to materialize, the organization needs your financial support.

According to Carl Fries, every one of the some 400 original members must renew his membership and over 100 new members must sign up if the outfit is to break even. The point is that good intentions are not enough; the moral is, "Do it now!" What NIMAS has done for Indoors, NFFS can do for FF generally.

What's on tap? Well, among other proposals, there is the likelihood of the following: A small-field and postal-events committee with Dave Linstrum as chairman. In the former category, the aim is to establish NFFS standards for Cd'H, Handlaunch and 82-foot Towline events. There is also the matter of tabulating and keeping records for



Kevin Bedwell, Sr. Rocket. Design flew very well.

FLYING MODELS

official NFFS events in both categories. And there is the matter of working out a system of postal qualifications for the annual Cd'H meet in France—and the obtaining of sponsors and proxies for same. There is also the matter of working-up educational and public-relations packages which emphasize the fun, insurance, and learning factors involved, along with a pitch for flying sites, sponsors, and the value of membership.

Other benefits include: A generally upgraded monthly publication, with full-size plan service, on-the-ball foreign correspondents, and an expert advisory panel to help modelers with their problems. The editorial staff is anxious to print more construction items, building data, and related meaningful material. Also proposed is a National Directory of FF flyers to be available at year's end.

What does this cost? Well, five bucks gets you a club charter; \$3.50 gets you a regular membership (\$4.50 for non-AMAers). Who do you write to? Either Bob Stalick (executive secretary) at 2807 South Oak St., Albany, Oregon, or Hardy Brodersen, (treasurer) 4729 Walnut Lake Rd., Birmingham, Michigan, will handle the details.

Got the word on the "Big Cypress" Meet at Sebring, Florida, last November. Jay Krell, a Skyscraper in absentia, provides the poop. (He's a captain in Systems Command in Titan III) He sez:

The one-day affair was a Free-flighters' dream on the morning of the 27th: light winds, good lift, little drift, clear skies and temperature in the 70's. The six-event card combined 1/2 A-A, B-C, A/1-A/2, plus Unlimited Rubber, Rocket, and Handlaunch. All regular events carried three-minute maxes on 12-15 sec. engine runs. The ukie end of the card featured Speed, Carrier, Rat Race, and Combat.

Krell managed to win in 1/2 A-A Open with his Cox TD .051, original 314-square jobbie with a creditable 10:08. Number two was Jim Stewart with 9:11 who clobbered his "Bounty Hunter" on the fourth flight. John Arthur came third in 9:00, losing his ship on the third flight. Stewart did better in the FAI event (a special), coming first with his ST .15 "Centurion" (5:13). He was followed by Gordon Fisher flying a Bill Bell design in 4:56. Juniors Gary Myers, Bob Myers and Gary Price finished one-two-three. Gary racked up 8:01 to win in even better time than the big boys.

Open Towline went to John Arthur in



Howard Heminger, Jetex "150" original design.

FLYING MODELS

10:56, followed by Roger Simpson with 10:55, a squeaker. Rog flew his "Athena" Nats winner in this one. (Plans in this issue—the Editor.) Jim Kloth came in third with 10:18. The winningest young'un, Gary Myers came first in Junior with 10:20, followed by Gary Price and Carolyn Kloth, both with good times.

Dewey Perry took Handlaunch in 2:32, followed by Jim Kloth. Bob Myers won going away among the Juniors. In Rubber, Rog Simpson and Gary Myers took their classes.

Jerry Wagner climbed to victory on the wings of an overweighted "Mexi-Boy" in B-C with 8:04 and was followed by Dick Miller and Bryton Barron. Bill Fisher nosed out Gary Myers in the Junior class.

Tony Regna took both A and B Speed with 138 and 136 mph. Pinckert and Johnson seconded in both events, turning 128 and 102 mph. Open Carrier was taken by John Schwartz (Class I) with Joe Williams and Murray Gardner running up. Young Lew Moyer took Junior in both Carrier I and II, and Schwartz repeated in Carrier II.

Pinckert and Johnson firsted in Rats with 6:47, with the team of Harper-Bowler-Sawyer seconding in 7:17. Lew Moyer came first in Junior. Combat went to Rolly Bowles, John Pizzulo and Jim Morgan in that order.

• Meanwhile, up in Illinois, the Fox Valley bunch was having its annual Turkey Shoot meet. Unlike Florida, the St. Charles' site offered clouds, cold, and incipient snow or rain. Members of the "Flying Fools" (St. Charles) were pitted against the Treetown "Modelaires", Carpentersville "Vultures", the Lily Lake "Airockers", Aurora "Hawks and Ring Kings". The venue was for Combat, with all ships and motors strictly stock.

Aurora's Marty Greif and Dan Stangle of the "Treetown Modelaires" fought it out for first place, and Dan won. Greif's "Shoestring" was first up with Stangle's Black Head Fox .35 "Flite Streak" right behind. Dan stayed right on Marty, forcing him lower and lower; finally down. Marty was right up again, but Dan pounced on him for the kill. The Black Head went sour then, and Dan was forced to land. With his downtime dwindling, he barely made it up again in time, and the combat went on. As the action got furious, a line entanglement wrenched the handle out of Greif's hand, and the "Shoestring" free-flighted into a nearby dead tree. The lines caught and the ship spun round and round until it was finally totalled. Each took home a turkey and a dozen eggs. Also taking home the birds were third-placing Chipper Greif (Marty's son) and fourthing Ed Jordan of the "Ring Kings."

• Editor Dick Marek of the "Fox Valley Letter" reports some interesting tests on the "Thermogrip" electric glue gun, manufactured by the United Shoe Machinery folks. Dick ran his tests on one-by-four pine with a twenty-second

jim walker firebird

half the building
twice the flying
see your dealer

soon!

holding period and a one-minute drying time. Using a spring scale to record his data, Dick found the joint withstanding a 70-pound pull test and a 75-pound shear test. In this latter, the joint began to yield at 75 pounds, breaking at 85 but peeling a layer of wood with it. In his next test, Dick joined two pieces of 3/4" mahogany veneer plywood together in a "tee". The joint broke at 70 pounds, but the glue did not fail—the veneer peeled off. Marek concludes: "This tool may be what the modeler needs for those quick-to-set joints and should enable him to get his plane completed faster."

• A Free-flight "Turkey Shoot" was also the order of the day up in Minneapolis. This one enjoyed good weather: beautiful day for the season, mild wind, light drift. Open class went to Bud Cornelius with a good-performing "Starduster" on ST .19 which racked up three maxes in a row. Dave Edmonson flew into second place with his Nordic, and re-entered to try to force a flyoff with his Cox .15 Class A job. (He didn't, though.) Ralph Kirk, flying an Ol' Timer, came third. Junior flyers included Paul Hooper, Frank Williams, and Dave Griffiths, finishing in that order. So, the guys taking home these turkeys were young Paul and ol' Bud.

• Our Tri-City Steelers' Bulletin got to us in a roundabout way this month; it was delivered to Walt Leonhardt up in Lawrence, and he kindly forwarded it with a "hiyuh" note. Well, it seems that the St. Louisans are resting on their laurels, kinda takin' things easy after a pretty good year. A bunch of the boys, including World Scale Champ Warren MacZura put on a fall demonstration on the parking lot at Grant's. Flying within a roped-off area, a squad of "Steelers" showed crowds of shoppers how Combat, Stunt, Scale, Rat Race, and Carrier should be flown. They kept it up for four and one-half hours and enjoyed every minute of it.

On the PR scene, the annual "Steelers-Thunderbolts" banquet did a lot to cement relations between area modelers and the Airport Authority. After the feed, held at the Alton Civic Mem-

(Continued on Page 43)

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February 1958
P-51 Mustang, Ted Strader • Jet 50, Hank Dil-
lenkofer.

June 1958
Shillalah F.F. by C. P. Moody • 1/2A Sputnik
speed model • Thunderbugs Trailer for models
by F. L. Swaney • Beginners proto by Dan Tracy.

October 1958
Del Gatto's "Aeronca K" rubber f.f. • Tandem
Bomber R/C • 49 Twin • Mackey's "The Luck"
Combat.

November 1958
All National Model Airplane Championships issue.

December 1958
A-1 Glider by Don Gurnett • Bilgri's Indoor "B"
model.

January 1959
Cayton's "Firefly" Combat • John Piechtl's
"Ramrod" Combat • Palanek's SD-3 "Flying
Spy" u/c.

February 1959
Rubber-powered "Dart" by Gerald Zeigenfuss •
Asteroid .049 f.f. by Bob Hunter • 3P2N R/C
Servo by Gene Thomas.

March 1959
Ca-Ja by Don Drury • Hopper by Ray Booth.

April 1959
"GUSTY", Joe Bilgri & Joe Foster • STUNT,
R/C Model by Richard Vance.

May 1959
Temco TT-1, J. E. Wells • Bean Bogan, Dick
Werner • Stitts Ultra-Light by Henebry

June 1959
"Niblick" A/2 Glider by Bob Hunter • Del Gatto's
"Fiesler Storch" rubber f.f. • Scarinzi's "Devil
Dart" u/c Combat.

July 1959
Cayton's "Sky Master" .19 f.f. • Jim Horton
"X-3" A/2 glider • Don Schauer's "Twister"
team racer.

August 1959
"Nogy" Glider by Gilliam & Hunter • Profile
"Blueboy" R/C by Palanek • "Nieuport" 17c.1
.020 u/c by Del Gatto.

September 1959
"King Sweep" u/c Stunt by Larry Grogan • "Hi-
Tail 500" f.f. A by Mel Schmidt • Profile Stunter
by Charles Mackey.

October 1959
F.A.I. Gassie by A. R. Collinson • "Crusader"
u/c by Clair Sieverling • "Ballerina" u/c Stunt
by Charles Lickliter • "Werewolf" u/c Combat by
Scarini.

December 1959
"Curvette" .049 f.f. Sport by Keith Laumer •
Larry Conover's Flying Saucer for Jetex.

February 1960
Scarini's "Grey Ghost" u/c Stunter • Handlaunch
Glider by Stu Savage, Part 2 • "Yard Bird" f.f.
Sport by Keith Laumer.

April-May 1960
F.A.I. Raider by Joe Bilgri • Cessna L-19 "Bird
Dog" by Vince Micchia • Stinson Voyager, Paul
Del Gatto • Side Winder by Gerald Zeigenfuss

June-July 1960
Tri-F.A.I. by Bob Hunter • Dust Devil by Don
Yearout & Henry Mullin • Panic, Paul Del Gatto.

August-September 1960
Palanek's Sopwith S.E.5A for R/C • C. V. Russo's
"Gigantis" 90 mph Stunter • "Starduster" f.f.
Gassie by Gilliam & Hunter.

October-November 1960
Ramrod Adjustment by Ron St. Jean • DU-AC R/C
Actuator by Strader • Del Gatto's Electric u/c •
"Hi-Trail 320" by Mel Schmidt.

December-January 1961
"Whirlwind" R/C by Strader • "Nova" u/c Stunter
by Larry Vuncanon • "Sztz" Jetex by Bob Hunter.

April-May 1961
Frank Huffman's "Little Richard" .45 f.f. • Pala-
nek's "Nieuport 11" for .020 • "Sun Devil" u/c
Stunt by Clair Sieverling • "Lulla-Bi" f.f. Sport
by Keith Laumer.

June-July 1961
"Easy I" R/C by Strader • "Which-a-Way" Com-
bat by Walt Williamson • Del Gatto's "Stinger"
u/c Combat.

August-September 1961
Frank Horsch's "Plunderer" R/C • Strader's "No-
mad" .020 R/C sailplane • Zoomerang sport model
• Scarini's "Tor-Rat" rat racer.

December-January 1962
Bob Munroe's "Big Eagle" giant 110" f.f. • Dale
Kirm's .15 "A-Burner" speedster • Howard "Mike"
R/C Multi.

February-March 1962
"Fairfielder" R/C by Phil D'Ostilio • Mackey's
Delta Stunter • "Switcheroo" twin-engine sea-
plane by Keith Laumer.

June-July 1962
Del Gatto's P-47 T-Bolt u/c • R/C Shiner by Ted
Strader • FAI Hustler f.f.

August-September 1962
The Scavenger R/C Seaplane • Sea Gull R/C
Glider • Dub-L-Dek-R f.f. sport by Keith Laumer
• Mackey's Hummingbird u/c

October-November 1962
"Ridge-Hopper" R/C .15-.19 • Control-line Cur-
tiss Hawk "75" • 1/2A "Simple Sam" f.f. by
Bill Dunwoody • Nationals Photos.

February-March 1963
Douglas JD-1 by Bob Doell • Dornier Do-335 A-1
• "Square Eight" helicopter • "Yoo-ha" 1/2A
Free-Flight by Harry English • "Tranquilizer"
.010-.020 sport or R/C.

April-May 1963
"Airknocker" R/C by Bill Winter • "Vulture"
R/C glider • Grumman "Ag-Cat" profile biplane
Control-line • "Show-Off" f.f. hydro by Ron St.
Jean • "Mutineer" Control-Line sport.

June-July 1963
"Mosquito" u/c Scale with retracting gear •
Citation 10-Channel R/C • Half-What .049 R/C
• Navigator R/C Flying Boat by Don McGovern.

August-September 1963
"Ridge Hawk" proportional R/C • "Chicken
Hawk" R/C biplane by Ted Strader • "Mother
Hawk" towline glider with pick-a-back Jetex glider
• Stuka control-line Stunt.

October-November 1963
"The Gypsy" R/C powered glider • B-25 Mitchell
twin-engined stunt • "The Horizon" FM Project
(plans) • 1963 Nationals.

December-January 1964
"Go-Wind" R/C low-wing by Strader • "The
Sneaker" 4-in-1 sport flyer • "Red Wing" off-
set engine flying wing control-line.

February-March 1964
Genie R/C by Marty Meyer • Echo Wakefield by
Joe Bilgri • Ice Breaker F.F. for .09-.19 • La
Donna twin-boom u/c • Ton-Up 100" R/C tow-
line glider.

April-May 1964
Spad S-VII R/C scale • Frisky A/1 Nordic glider
by Manny Andrade • Zephyr u/c stunt • Grum-
man Wildcat profile u/c • Aparition 100" flying
wing glider with power pod.

June-July 1964
Fokker D-7 Scale R/C • The Decoy Unlimited •
Beechcraft Stunter • Piper Super Cruiser • The
Earthquake.

August-September 1964
Vector Director Mk III • F5F-1 Skyrocket Stunt
Ukie • Indoor Intruder • Witch's Brew R/C •
Tradewind R/C Soarer.

October-November 1964
1964 Nats Photos • Champion R/C • sssSam Jetex
150 • The Explorer • Dominic u/c.

February-March 1965
Blue Angel Stunter • Gruman F3F-1 u/u • The
Nightingale • Dornier DO-18K1 Flying Boat

April-May 1965
Scorpion R/C • Spotter A-2 • Raven-Prey R/C
• Combat P-38 u/c

June-July 1965
Tempo Multi-R/C • Shiek Control-line Stunt •
Li'l T Radio Sailplane • Hawker Typhoon U/C.

August-September 1965
Sky-Liner R/C • Whirl-Bird Helicopter • Mold
Fiberglass • Barracuda Flying Boat • Westland
Whirlwind I Profile U/C.

October-November 1965
B.I.R.D. "Special Multi Radio Control" • "Stunt
Liner" • "Flamingo" Soarer.

December-January 1966
Ted Strader's Mister "E" • Control Scale Lind-
bergh's "Spirit of St. Louis" • Free Flight "Gnat"
• "Structure of Aircraft" Pt. I.

February-March 1966
Lockheed "U-2", Robert Trishin • "Mirage"
Wakefield by Roger Simpson • "The Strafer"
control-line sposter • TGX Glider by Larry Conover.

April-May 1966
Mark "B" Multi, Joe Foster • The "Talon" A/2
Nordic by Reid Simpson • The "Sea Vixon" •
"Touchdown" R/C.

June 1966
F.A.I. Nats Winner, Roger Simpson's "CEN-
TURION" • Extended "GEE BEE", Bob Miller's
Stunt Design.

July 1966
Super Sonic Stunter • Control-line stunt machine
• "CASTAWAY", A/1 Nordic, by Joe Bilgri.

August 1966
"PATRIOT", for Digital Type Radio • The "CARA-
VAN" 1/2A Contest Craft, by Joe Bilgri.

September 1966
"ALPAVIA" R.F.3, Radio scale powered soarer •
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MODEL BUILDERS

(Continued from Page 41)

erial Airport restaurant, a Mr. Lanza-ratte, speaking for the Authority, cited the fine program and the excellent relations maintained between the flyers and the airport. Featured at the banquet were filmed highlights of the annual contest and the Nats, Warren MacZura's world-champs "Gulphawk", and a talk on youth problems by Dr. Ray Troyer, Psychologist of S.I.U.

• Up in the Northwest, we note that Dan Sobala has been named to the Contest Board post vacated by Bob Duffield. Dan served in this capacity very well in New England, is a good man for the job. Also in the news is the beginning of an Indoor Scale and Handlaunch competition for which the Kent Strato-bats have put up a two and one-half foot, perpetual trophy. The contest is figured as an annual or semi-annual event for four-man teams. On the FAI front, Norm Ingersoll has accepted responsibility for CDing FF eliminations and semi-finals in '67. Norm lives at 14806 NE 13th, Bellevue, Wash., if you want to contact him.

We also learn from the WMC "Patter" of an interesting Ol' Timer concept proposed by John Lorence. John's concerned with the Antique event in OT comps. Figures that "Miss Americas" and "Red Zephyrs" can't compete in duration events with "Comet Clippers" and similar ships. So he suggests the following as a solution:

Make all ships fly on ignition and ROG. Give 'em all an unlimited engine run, but fix the max at three minutes. Any time accruing beyond the max to be subtracted from the three-minute base. (A six-minute flight would be worth zero time) Allow DT's only as a safety measure and call any flight in which one cuts-in an attempt.

• Word from Dick Welch down Texas way has it that the Irving meet had a larger than expected turnout. Part of the credit might be due to slow Combat and Rat events. Everyone "flew in a real relaxed manner and had a good time." Seems to be a lot of sentiment

for slowing down these two rip-snorters.

Dick also reports progress on the formation of an area modelers' council. Clubs are naming reps to an upcoming series of meetings.

At the Four Corners site, the Dallas Cliff "Cloud Climbers" and the Ft. Worth "Planesmen" are having a series of FF challenge meets. The idea comes from the challenge meets which the ukie clubs have been running for a couple of years now. Elsewhere on the FF scene, the meet at Bryan was a "real blowout" with high winds and mad chasing. The Houston boys sponsored this one, and Dick Mathis' "Trigger-Bounty Hunter" design won most of the hardware. Other good ships being flown down below the Red River include "Shorthorns" and "Stardusters", and, of course, "Wizards" of all sizes—notably in the capable hands of Charlie Polansky.

Anyone wanting the word on Texas doin's should contact Dick at 2130 Lemart, Grand Prairie, Texas 75050.

• Indoor Notes: Bud Tenny reports in INAV that original NIMAS films (16 mm., silent) of flying at Lakehurst are available to clubs willing to pay the postal charges both ways. The films, taken by Joe Poloso, include a short color sequence of mike models as well as black-and-whites of Indoor Scale activity. By the way, anyone who has a mailing container for a seven-inch reel and who would like to donate same to a good cause ought to contact Bud (Box 545, Richardson, Tex. 75081).

Two proposals affecting Indoor flying are before the Board for initial comment. They have been generally accepted where reported on. The first provides that the flyer or proxy flyer of an Indoor model has the option of holding the model or winding the motor. He may use a one-man rig if he operates same. The other provides that there shall be no restriction on the design or construction of Indoor gliders as long as the structure is strong enough to withstand a launch "made with sufficient force to cause the glider to gain a substantial amount of altitude."

• Now here's an oddity: John Tischler reports in "Shoc Talk" that the thermals are failing at the Elsinore, California, site. At the fall "Sky Hoppers" annual Open meet, "times were generally low, with many ships settling down in less than two minutes." And at the Orbiteers' annual, "both Saturday and Sunday had only mild lift and it was tough to make a max." The only class to max out at this one was B-C; the smaller ships just didn't seem to have it in the weak lift.

At the Shoc Meet, high times went to Bob Johnson in B-C with 20:49 and Bob Patchin in A with 17:21. Vic Cunningham went for 14:07 in ½A, and George Schroedter went for 12:14 in Towline. Other times averaged about 13.00.

• Dave Bales sent us a report on Indiana doings and a copy of a fine

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newspaper story on the Bloomington "Wing Kings". The story took most of one page and included three pix of different types of model activity. This is the kind of public relations effort most clubs need.

At the "Purdue Aeromodellers" Handlaunch meet, four re-entries were permitted, and the rules specified a 100-sec. max with the best three out of six flights counting. Bales took a first at this one with 262 sec. Bob Larsh came second in 233, and Joe Wahl slid into third with 213. Dave flew early and got a little sun lift. After the sun went in, no one could touch him. Chuck Borneman got four maxes, but they were spread out over four entries, having nothing to go with them. Joe Wahl has been giving the boys fits in Hand-launch despite having flown the event only one season.

Indoor flying this winter will probably suffer. Herb Sommers has been reassigned and the boys haven't another "in" at Bunker Hill. A possibility might be the Indianapolis Naval Reserve facility; more on this if it develops. Beyond this, flying will be confined to local school gyms and will center around all-balsa scale and pylon tether events.

The fall Final at Converse was held in cool, damp weather. Some rain in the morning gave way to wind and clearing in the afternoon. This Wing Kings' shindig was held with seven-second runs and two-minute maxes.

(Continued on Page 45)



Corbin Super Ace, K&B .049. Terry Kuehne's.



Ken Johnson, a Canard Wakefield. Plans coming soon in F.M. Flew at '66 Nationals. Nice!

jim walker firebird

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THE "ZEPHYR"

(Continued from Page 40)

first letter, I'll try to inform you what happened since that time. Our Club organized a public competition of free gliders and rubber models in April 1966. I took part in three championships of our Republic, gained twice the first place and once third. Thus I have been declared champion of our Republic in this category. Besides this, our members of the Club also visited Krkonose, (Giant Mountains), the area of our slope soaring competition in September. This is the site where I made my record last year. At that time we organized our slope soaring competition in September. One week later we visited that site again together with a "Sport Commissioner" and Time Recorders for an attempt at the endurance record. (Editors note: Most European countries, especially the Iron Curtain Countries, have a Government official to officiate at International Record Trials, (see "Letter from Alma Ata" in January, 67

American Modeler).

We started early at 4:30 a.m. It is about 19 miles from Vrchlabi with an altitude difference of 3,300 feet. I met there the exact wind I wanted. At 5 a.m. I launched. Unfortunately within a half an hour the wind ceased and 48 minutes later I landed. I had to replace the wings with bigger ones and these had a higher undercambered airfoil. Having finished a few shorter flights I landed gain, and again. Only after four hours of trying did I manage to keep the model in the air. This flight passed at highest heat, against sunshine and took 4 hours, 54 minutes and 29 seconds. We will make a small expedition to that site still this year and try to gain more time in endurance.

My flying is somewhat difficult, my model being provided with a rudder controlled by an electromagnet with deviations Left or Right only, so that it is unavoidable to continually control the model . . . even by straight flight. For this purpose an elevator with trim seems to be suitable. Until now I did not succeed to get better equipment.

Thanks for your kindness to let me have your model magazine which I don't possess, I only borrow it sometimes. I will send you our Modelar (Czek Model magazine). I would be glad if you could send me coordinates of airfoils used by you. Here, I have to be satisfied with those which are sometimes published in Modelar. Finally one inquiry regarding the 4 channel digital proportional R/C system which you mentioned in your letter. Was this built in an amateur way, or from kits? I am a designer of compounds in an electronic factory. If it is possible to build it in an amateur way, I would be interested in the respective scheme. I hope to stay in mutual correspondence with you and believe our relation to lead to a good friendship, though we are separated by such a distance. I enclose a plan of my model with greater wings (Fakir IVa) and two photos of the site of our soaring activities. . . . Vladimir Stefan, Fugnerova 873, Vrchlabi, Ceskoslovensko (Czechoslovakia).

Because we received the Swiss designed "ROK" by Petri Baumgartner in 3-view form, we are going to retrace the FAKIR IVa plans and ink them for the next issue of the "Zephyr."

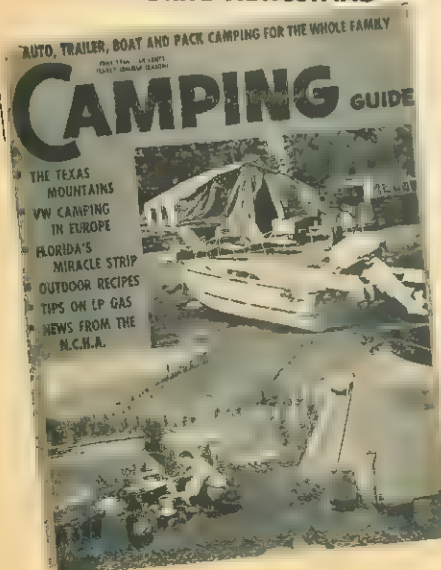
Just as we go to press, our German friend, Kurt Kroger, Lufthansa Flight Engineer, said that he heard in Germany that the famous Georg Frederich flew for 12 hours, 2 minutes and 13 seconds at the famous gliding site at Rana in Czechoslovakia last July. We don't know if he has filed this as a World's Record in R/C glider duration with the FAI in Paris, but we are writing to find out. This of course, would beat South African's Geoff Brooke-Smith's record of 11 hrs., 33 minutes and 30 seconds.

● The last item this month is a card from Oskar Czepa, noted Austrian glider expert and holder of the Austrian National R/C glider duration record of 7 hours 2 minutes. He writes he has had some beautiful flying last summer with his new "Standard Austria" which now has a fiberglass fuselage, pendulum rudder and a new wing section, which is not so critical. He also reports he is working on a new project—a powered glider which is also for aerobatics . . . lots of work!!! ●



Practice on powered winch tow. Frank Colver on launch with flag. It is used for instant communication to winch operator. Kurwi lifting on the line, builder Jeff Bates pumping out tow corrective signals.

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John Burkam's "Hi-Time" 'copter, a Cox .020 Pee Wee driving 8/1 gear ratio. Clutch to disengage for starting. Belt drive to tail rotor.

MODEL BUILDERS

(Continued from Page 43)

Some 200 officials were put up. The best times were racked up in 1/2A, with Meredith Chamberlain coming first in 344, one second ahead of Dick Covalt. Fred Flagle was third in 313. Other winners included: Bob Pione in Towline, Bob Larsh in Handlaunch, Bill Shaffer in A-B-C. Among the Juniors, Mark Flagle had a good day: firsts in 1/2A and ABC and a second in Handlaunch. Tom Mills took both Junior Handlaunch and Towline.

● Scale fans would find the current discussions on pendulum control in the NAA "Flightmasters" bulletin quite interesting. Reportedly, Jed Kusik has been having excellent results with a pendulum-equipped "Hellcat" and a "Hurricane." Darcy Staggs is developing a pendulum-controlled rudder and elevator system for a DR-1. Darcy, author of an article on pitching stability, concludes that this factor can be augmented by a pendulum-operated elevator. However, he cautions against dampening the pendulum or attempting to use one on a fast, heavy model. In the latter case, the pendulum will couple with the model "with spectacular results!"

In the same issue, Fred Weitzel suggests that one way to secure added duration is with a long motor (rubber, of course), and this means lots of slack. The trouble is that slack motors produce vibration and there is a practical limit to the amount which can be tolerated. His solution: Since the motor vibration is the same shape as any string vibration, "stop" it at the center via a double hook and bearing. In effect, this is to divide the long motor into two, not-so-vibrating sources of power. The big problem is in winding, stretching, installing, etc. So we're prompted to ask: "Why not a smooth, lubricated (but small-bore) bearing through which the motor passes at mid-point?"

● On the New England scene, the Tech Model Aircrafters up at MIT have started winter flying in duPont Gymnasium (corner of Mass. Ave. and Vassar St.) For a schedule of sessions, contact Peter Young, 362 Memorial Drive, Cambridge 39, Mass. Sessions will run about once a month.

In other news, George and Dottie Murphy, active in the New England Council and editors of "Free-flight Digest" and the "Council Newsletter", have transferred out of Rowley, Mass. Good luck, folks, and let's hear from you.

● Among our most consistent overseas contributors have been Bob Flain, editor of the Crawley (Sussex) "Turbulator", and Pete Branigan, editor of "The Message", operating out of Liverpool. Thanks to them and their staffs, we are able to keep up with such things as the recent Controlline Champs, and other English and continental meets.

(Continued on Page 50)

Jim Walker firebird

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"TWIN FLOATS"

(Continued from Page 26)

tice to add a slight "V" bottom to the floats to dampen out the bouncing/pounding of the float. This "V" shape is termed "deadrise" and enlarges the wetted area, (and therefore drag) so don't give it much. 10 degrees was chosen for the angle on these floats. With a steeper angle we feel a concave hollowed bottom would be an improvement.

Construction of the floats is quite simple, essentially of sheet construction and reinforcing strip balsa. The plan is self explanatory, and as only the more experienced builders tend to tackle R/C hydro flying, there is little need to cover basic assembly procedure on this.

Brace the brass tubing that will hold the wire struts as well as possible and epoxy in place. The float must be rigidly mounted in relation to each other as well as being firmly fixed to the aircraft. The top of these floats should be approximately parallel to the zero line of the model. If need be, shim with strips of balsa between the mounting wire and the fuselage. Ny-links can also correct here to a certain degree.

Try to keep all chine edges sharp, rather than sanded round, though corners not in water contact can be rounded as you see fit. The usual covering of silk or rayon etc. is suggested to avoid splitting of the sheet etc. An external application of Sig "Celastic" will make float bottoms durable enough for skidding in on hard ground should the need arise.

Well, have at it. Hope they turn you into a seaplane addict, for it opens up vast new flying sites to those in coastal areas. If you fear for your radio in a dunking, the Jan. '67 issue of F.M. solves your problems with the totally submersible R/C "All-Dry Canister" design, well worth building if you are seaplane minded. Offers greater crash protection too, as well as sealing your equipment in a dustless, grit-free environment. Your servos will thank you with less glitches.



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Select the finest woods throughout, eyeball for warps before you use. Nordic competition rough.

"ATHENA" NORDIC

(Continued from Page 14)

rate the ribs with a knife and rub the rubber cement off. Use one of the "B" ribs as a pattern for all of the C-1 and C-2 balsa ribs. As shown in example No. 1, the tip ribs are made with a diminishing undercamber all the way out to the tip. I've used this method on my Wakefields as well for the last couple of years with good results. The top camber remains the same, from the leading edge back, all the time. Be sure to use spruce wherever specified throughout the wing and put in the shear web, as this is where the strength lies. When laying out the wing, block up the leading edge, and the front of the ribs, with $\frac{1}{16}$ " scrap to allow for the $\frac{1}{16}$ " bottom sheeting. Use a straight piece of quarter-grain for the wing trailing edges. When the wing panels are dry, turn them up side down and sheet the bottom, then glue the shear web in. Completely carve and sand the panels before you glue the tip dihedral in. Gauze the dihedral joints and also the bottom sheeting joint. Cover the wing with Jap tissue and give it six coats of dope. After doping, strap the inboard panels

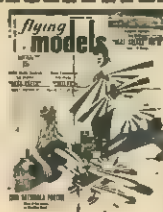
down to flat surface for about a month to insure against warps. The tips should both be washed-out (tip trailing edge warped upward) approximately $\frac{1}{8}$ ".

Stab: As the trailing edge here is fairly thin, take care to select a piece of hard, straight, quarter-grain balsa to make it from. Again, use spruce as specified, and the shear web. Try to keep the stab light, but give it three or four coats of dope, so that when it rains, it doesn't sag and change the models trim. Wash out the tips of the stab $\frac{1}{16}$ ".

Fuselage: The nose is turned on a lathe from a 1" diameter brass rod. Drill and tap the hole for the $\frac{1}{4}$ "-32 threaded aluminum bolt which is epoxied into the fuselage. The finished nose piece is $\frac{15}{16}$ " in diameter, weighs 4 ounces and should be hollowed out in the back in case you need to carry a little extra weight for balance. The fiberglass rod can be bought in bait and tackle stores that sell fiberglass fishing rod blanks. My rod was $6\frac{1}{2}$ feet long and tapered from $\frac{5}{8}$ " to $\frac{1}{8}$ ", with a wall thickness of a little less than $\frac{1}{32}$ ". Cut out the five wood laminations that form the fuselage front. The center piece is notched for the towhook anchor block, the bolt, and for the D.T. Timer if you use one. The two plywood laminations are notched only for the timer. If you'll look on the plans you will see that only the three center laminations form the stub to which the rod is epoxied. The two outer ones run back only to the front of the rod and must also be notched for the timer. Laminate the pieces together with regular cement. Square off the front, then epoxy the aluminum bolt in place. After the epoxy sets up, screw the nose piece on and draw its outline on the front of the wood for a carving reference. Next glue one of the two $\frac{1}{32}$ " plywood ribs into place, making sure you have the correct incidence angle. The wing wire holes should already be in these ribs. Using these holes as a pattern, lay the fuselage flat on its side and drill the $\frac{1}{32}$ " holes. Slip pieces of brass tubing through these holes to act as guides for gluing the $\frac{1}{32}$ " plywood rib on the

(Continued on Page 49)

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Turned brass nose plug for balance, fits nicely into fuselage. The aft boom is a hollow fishing rod blank from tackle dealer. Is ideal.



Beneath: trike gear design, similar trimming.

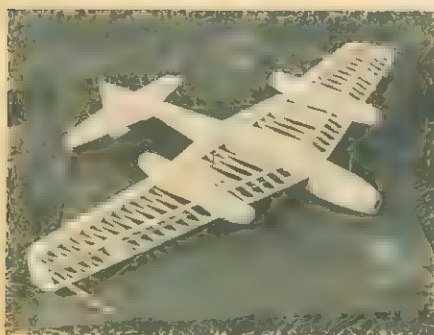
"ME-262" STUNTER

(Continued from Page 23)

pattern to the sheet in all three holes. Make your cut and then move the pattern down to the pin marks. This will give you a place to make your next cut.

Almost forgot! Cut the jet pod sides to shape as shown on plan. Next, place $\frac{3}{8}$ " balsa in front, in back and along the side of each pod. It should look like a box. When dry, sand to an oval shape, then glue to the wing. Along each side of the jet pods and the body, (top and bottom) 1" wide ribs are installed. Cut them from the same rib pattern you use for wing ribs. These ribs, reinforce the structure, and give you a surface to hold your wing covering. Next pin $\frac{3}{8}$ " ribs into place, then cement in position. When dry sand them smooth with a long block and sandpaper. This will help you keep the same airfoil all the way out the wing. Next final sand all rough places and cover the structure when satisfied with the smoothness.

Finish: Telling a man how to finish is like telling him how to fly. It's something you do the way that is best for you. We used a light gray for the main color with three darker grays for the spots, starting with the lighter gray for the spots on the tip. As you go closer to the fuselage the spots get darker and finally ending in black. The Iron Crosses are black and white. The "262" weighed in at 48 ounces and flew best on 70 foot lines. Good luck and happy flying.



Wings sweep back a fair amount, well tested on earlier designs. Note leadout positions, pods.

FLYING MODELS

BUILD OUR OWN

(Continued from Page 32)

last long in a very competitive industry if it were.

With a great increase in popularity of "readi-built" planes, it is true, there would be mass participation in the hobby. Presently, many model builders lack the time (could it be due to too much T.V. spectating etc.??) to engage in building activities. Purchasing a completed airplane would appeal to this new and potentially much larger group. A group who just does not possess the enthusiasm, aptitude, skills or patience required to create thier own aircraft.

We are told by almost everyone in the modeling business that this expansion is good. That we as modelers will gain. I seriously doubt its worth to the individual modeler, except in possibly bringing the cost of equipment down through mass production. However, I can see why certain professionals would encourage mass participation.

The firmly established and responsible professional must realize he would be creating a "fad", that would in a short life tumble and take everything with it. The original "model builder type" would have dropped out of the activity long before, since the challenge he enjoyed so much would no longer exist. Since purchasing completed models doesn't form a very constructive training background, it would be very difficult, if not impossible to reinstate the activity as we have known it in the past, where individuals construct their own airplanes."

The current status of the readi-built type airplane is that of a "support" to the established hobby of building and flying model planes. It's currently giving some active modelers a chance to get a plane in the air, when there just isn't time to build a new ship after a disastrous mishap. This alone is justifiable, but will these same fellows ever find the time to construct a new ship again? In many cases, laziness may win out.

Of course readi-built models will encourage junior participants, (with well-heeled parents) to join the sport. While they would still be very expensive, somehow "good old dad" might be more likely to purchase a completed plane for junior, rather than a box of parts and a vague promise of structural assistance at the workbench level. All the good father/son relationships that could have stemmed from such a bending of mind and spirits toward its future flights, will never come to pass.

For the betterment of all concerned in this hobby, the contest board should continue to support the "Builder of the Model" rule... There should be a very clear definition between a "home-built" plane (which includes kit designs) and a manufactured aircraft. This definition should not hamper progress in new materials and methods. Of course, this is a tall order and the difficulties of arriving at a fair definition cannot be under-estimated.

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The contest rules should encourage a greater percentage of the already active modelers to join our ranks in competitive events, and thus influence more youth and junior participation from the example they set by their own creative efforts. In this way, each new modeler expands his skills with a firm foundation in aerodynamics, and becomes a more competent, safer flyer. In time, these new flyers replace the "old timers", and keep the sport alive. On the other hand, by just adding more unskilled flyers to the hobby, the already over-burdened field, frequency and noise problems would be greatly increased, to say nothing of the dangers involved with "droves" of unskilled people attempting to fly some of the current and future "buzz-bombs"! A person who has constructed his own aircraft is going to be a more conservative flyer than one with a manufactured facsimile.

If and when this "fad" does occur, there is understandably going to be more legislative action, governing and licensing of model aircraft, with rules stating when and where they may be "allowed" to be flown. Naturally, all this will be taxed and certified by the national or local government. And, if and when this comes to pass, I for one will switch to tether control line models, flown in the garage... with a muffler of course!"...

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WHAT'S COOKING?

(Continued from Page 3)

to be had. "Finishing Touch" Decals is his answer, and he has made them available in two sizes, 17" x 22" for larger aircraft, and 12" x 16" sheets for smaller designs, ideal for most control line and free-flight aircraft. A sample sheet is shown herewith, though we cannot do justice to these colorful decals in black printer's ink.

The quality of the decals is reportedly the best to be had. Manufactured for "Finishing Touch" Decals by the Meyercord Co., world's largest manufacturer of decals, and a supplier for the U.S. Air Force. The decals are coated with a clear nitro-cellulose base lacquer that will not yellow or crack and yet is fuel resistant. They are reported to have an almost indefinite shelf life. Sheets come wrapped in polyethylene for protection. At hobby shops, \$4.98 for the 17" x 22" sheet, \$2.98 for the 12" x 16" sheet. Content is the same on both sizes, and six different layouts are available. A circular packed within each shows the others available. Hope they help. They look very good.

● Full Size Plans for the designs in this issue are available through Model Plan Service at prices as advertised. The "Boomerang" multi R/C biplane by Wally Zober; the semi-scale "ME-262" Stunt Control line by James Vornholt; and the 1966 Nationals A/2 Nordic winning "Athena" by Roger Simpson are the designs featured. Also, a 9" x 40" Full Size plan for the "Twin-Floats" may be ordered. The list of plans available grows with each issue, so a close look at the current ad listing might give you ideas for your next project.

The preceding Feb. issue featured Maynard Hill's "Bong Boomer" giant soarer which set the R/C Glider World Altitude Record; the "Fury" Stunt Control line and the "One Grand" Class "C" Contest Free-Flight by Dick Mathis. Its none too early to make the chips fly, the contest season is fast approaching!!!

● Hobbypoxy Products, a division of Pettit Paint Company, has announced a unique line of model building materials. Known as 'Easy-Does-It' supplies, they include a new type of molding cloth for use with Hobbypoxy epoxy glue, a specially designed glue spreading knife, scraping blades, as well as custom dipped balloons designed for the "Easy-Does-It" FORM method.

"Easy-Does-It" cloth is non-toxic, easy to cut with ordinary scissors and reportedly, does not leave small thread slivers to irritate the skin. Readily formed around complex shapes, it is lighter than fiberglass, yet retains exceptional strength. It 'wets' fast with Hobbypoxy glue and is easy to work with regular model tools. It is especially recommended for forming cowls, wheel-pants, wing tips, and for reinforcing

fuselages at points of heavy stress or wear.

The "Easy-Does-It" glue knife is designed to mix, apply, and spread glue on open surfaces and in fillets and crevices. The scraping blades are scientifically honed for scraping Hobbypoxy glue to a satin smooth finish.

All "Easy-Does-It" supplies and materials are available in hobby and model shops. Full information, featuring step-by-step photos, on the "Easy-Does-It" methods is available free from Hobbypoxy Products, Division of Pettit Paint Company, 507 Main Street, Belleville, New Jersey.



● Are you a scale model boat enthusiast? If so, there are three new fiberglass scale miniature Uniflite boats you can tackle. All are unique for their own special reasons.

The "Outboard Runabout" is ideally suited for the miniature electric outboard motors available at most hobby dealers. The battery compartment is located underneath the front seat. The kit is complete with a vacuum-formed hull and deck mold, seats, windshield and bow. The hobbyist can add whatever hardware he wishes.

Another model is a replica of the Luders designed "Annapolis 44" sloop. The hull is hand layed up fiberglass, and the cabin and deck are vacuum-formed. There is 3 lbs. of lead in the keel and the model comes complete with sail. Rigging can be completed in as much detail as desired by the hobbyist. It retails for \$16.50.

The third model is of the 46' Uniflite. The model measures 35" in length and has a 1 1/4" beam. It is ideal for radio control and operating at a 7 1/2 mph speed it duplicates the 30 knot performance of the big boat. It retails for \$26.50.

All of these models have been designed by Everett Clifton, one of the boating industry's top pattern makers. More complete information can be obtained by writing Island Plastics Company at Lummi Island, Washington. ●



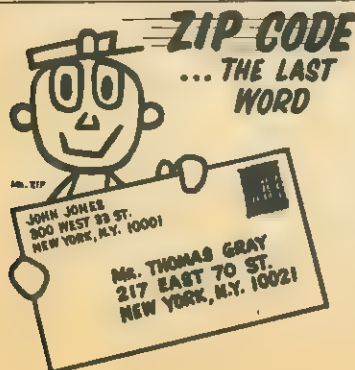
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"ATHENA" NORDIC

(Continued from Page 46)

opposite side. When this rib is dry, epoxy in the tubing that will be your permanent bushings. Carve down the rear stub to a $\frac{1}{2}$ " diameter, then start trimming off the large end of the glass rod until the rod fits tight on the stub. Before epoxing the glass rod to the fuselage front, check its alignment by setting the assembly on a flat surface. Sideways alignment is done strictly by eyeball. Next cut the rod to its correct length, carve and shape the fuselage front, and epoxy on the rudder, stab rests, etc. Any time you glue anything to the fiberglass rod you must use epoxy, and also sand the glaze off the fiberglass surface to get a good bond. Drill a small hole in the rod just behind the stub to run your lines through. Another hole is drilled in the rod 3" from the rear to allow the auto-rudder line to come out. The dethermalizer line comes out the end of the rod. The rudder

is covered with tissue and given six coats of dope. The fuselage front was finished with two coats of fiberglass resin.

Test Flying:

Before your first flight set $\frac{3}{8}$ " offset into your auto-rudder for glide turn. I turn my gliders to the left in the glide, but it's just my preference. Several hand glides should tell you if your incidence and C.G. are about correct. Use the full length of your towline for all test flights, with short D.T.'s in case you develop a stall. Try to set your model up for 20 second circles. Mine would tighten up to about a 15 second circle in good lift. I like my models to hang off a little bit to their left in the tow, which makes it easier to get off into their left glide circle. If your model waivers from one side to the other in the tow, gradually move the towhook back. If it veers off and won't come back straight, give it opposite rudder for the tow. Be sure to work closely with your launcher, and have a good contest season.



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MODEL BUILDERS

(Continued from Page 45)

Some familiar names popped up on the results sheet of the North West Area Championships. Here are the top three in each category: Power—S. Savini (Wallasey), B. Hooley (BAC War-ton), and P. Branigan (Liverpool); Ribber—B. Picken (Wallasey), U. Wannop (Wallasey), and B. Peers (Congleton); Glider—J. Boon (Congleton), T. Dilks (Spitfires), and D. Yates (Wigan). Wallasey made it a clean sweep in the Grand Championship category, with Picken, Savini and Wannop finishing in that order.

At the "Rootes Trophy" meet at Salmesbury, John O'Donnell managed to max out in just about every event to be a major contributor to White-field's Team victory. In the trophy events, he maxed out and took firsts in Glider, Rubber, and Power. And in the Open classes, he took a first in Glider and seconds in Rubber and Power (max-ing out in all). In both series, he racked up twenty-one maxes; four each in Trophy events and three each in Open competition. Additionally, he hit 3:44 in the Rubber flyoff and 3:45 in Power, the two Open events in which he placed second. Winners in these events were Martindale of Wallasey (Power) by four seconds, and Picken, also of Wallasey, by thirty-six seconds in Rubber. About the only event in which O'Donnell did not max out was Hand-launch Glider. Whew!

Pete Cameron, reporting on the SMAE Southern Gala at RAF Odiham, notes that a thick mist delayed the starting of the FF events until two o'clock. This was very frustrating because wind conditions were favorable and retrieving was no problem. When the visibility improved, the wind remained calm and officials were re-corded at a rapid rate.

Open Rubber had forty entries. Of these, twenty-four scored full rows of maxes. With the flyoff set for 5:30 P.M., the contest didn't really start until quitting time. Bob Bailey of Croy-don scored 8:50 to win.

• Another overseas standby has been "Modell-Nytt", the official organ of the Swedish Model Flying Club. This publication is noted for its fine plans, many of which have been reproduced in this column. Our big problem with this one has been translating the material. The current issue gives an account of the World Champs at Swinderby with an accent on the performance of the Swed-ish team. The editor of this one is Walter Johansson, Lammhult. Try con-tacting Lars Andersson, Tycho Brahe-gatan 35, Limhamn, Sweden, if you're interested Lars is the corresponding secretary of the SMFF.

• Individuals and clubs are invited to send newsletters and other material for this column to Ed Whalley, 89 Lakeview Avenue, Bellingham, Mass., 02019, U.S.A. All correspondence will be acknowledged.



Rich Loomis, "S.E.5-A," ukie, McCoy .35 power.



Bill Schieman, Dayton, Ohio, original Rocket.



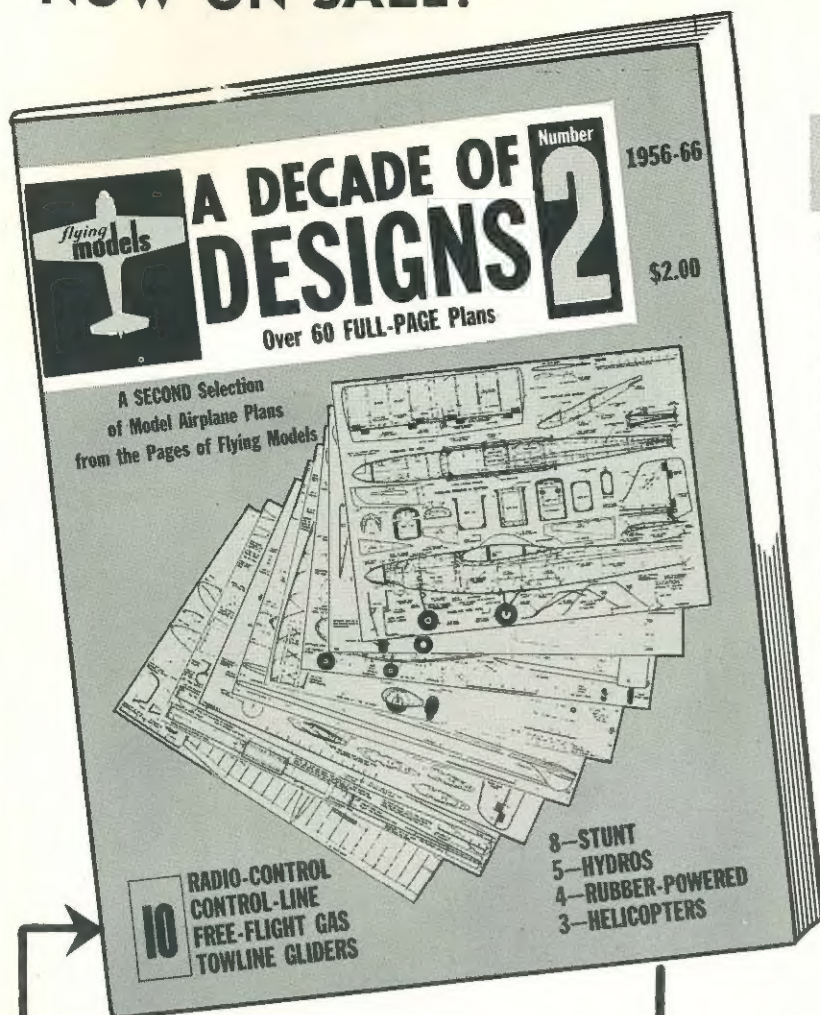
Gene Van De Walker, 15, his "Starduster X."



Bill Northrop's beautiful "Tiger Moth" biplane.



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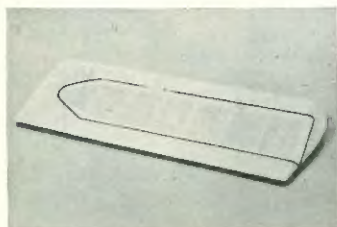
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